University of Maryland School of Medicine

Course Catalog

2005 – 2007

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The Oath of Hippocrates

I do solemnly swear by that which I hold most sacred that I will be loyal to the profession of medicine and just and generous to its members. That I will lead my life and practice my art in uprightness and honor. That into whatsoever house I shall enter it shall be for the good of the sick to the utmost of my power. I hold myself aloof from wrong, from corruption, from the tempting of others to vice. That I will exercise my art solely for the cure of my patients, and will give no drug, perform no operation for a criminal purpose even if solicited, far less suggest it. That whatsoever I shall see or hear of the lives of men, which are not fitting to be spoken, I will keep inviolably secret. These things I do promise and in proportion as I am faithful to this my oath, may happiness and good repute be ever mine; the opposite if I shall be forsworn.

America's First Public Medical School

University of Maryland School of Medicine
University of Maryland Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201-1559

Admissions Office (410) 706-7478

The University of Maryland Baltimore is an equal opportunity institution with respect to both education and employment. The University's policies, programs and activities conform to pertinent federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex and handicap.

The School of Medicine has the objective of securing a broad racial, sexual and ethnic balance in its enrollment. To achieve this objective it gives every consideration to minority student applications.

The University of Maryland Baltimore is accredited by the Middle States Association of Colleges and Schools. The School of Medicine is accredited by the Liaison Committee of Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.

Welcome From the Dean

I am delighted to share with you the information in this catalog, which provides an overview of the University of Maryland School of Medicine and its educational programs. We are very proud of our students – a wonderfully diverse group from all over the world. The University of Maryland School of Medicine has a proud tradition of excellence beginning with our founding in 1807. Our dedicated and outstanding faculty, staff, and students continue this tradition today.

I am please that you are interested in the School of Medicine and I invite you to learn all that you can about our school. If you still have questions, please call our Admissions Office at (410) 706-7478 or check our website at http://medschool.umaryland.edu.

Donald E. Wilson, MD, MACP
Vice President for Medical Affairs &
Dean, School of Medicine

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PROFILE

Established in 1807, the University of Maryland School of Medicine is the fifth oldest – and first public – medical school in the United States. It is also the first to build its own teaching hospital and the first to institute a residency-training program. The School of Medicine is the founding school of the University of Maryland, and today it is an integral part of the 13-campus University System of Maryland. On the University of Maryland Baltimore campus, the School of Medicine serves as the foundation for a large academic health center that combines medical education, biomedical research, patient care and community service. While its traditional excellence remains constant, the School of Medicine and its national reputation continue to grow.

The School of Medicine boasts the oldest building in the Western hemisphere in continuous use for medical education, the meticulously restored Davidge Hall, built in 1812. Two major classroom and laboratory buildings, the fourteen-floor Bressler Research Building and the nine-floor Medical School Teaching Facility, were completed in the mid-1970s. The mid-rise Biomedical Research Facility was completed in late 1992. Health Sciences Facility I (HSFI), an interdisciplinary research and teaching facility, was completed in 1995. HSFI provides clinical and basic science departments and animal care facilities with approximately 80,000 additional net square feet. HSFI also provides a much-needed connection from the Medical School Teaching Facility to Howard Hall and the Bressler Research Building. Health Sciences Facility II (HSFII), a 101,000 square foot state-of-the-art biomedical research facility, opened in 2003. This six-story research building houses laboratories, research offices and conference rooms. All but one major medical school research building is physically linked to the University of Maryland Medical Center and the Baltimore Veterans Affairs Medical Center.

The University of Maryland campus in Baltimore continues to expand as well. The 137-bed Baltimore Veterans Affairs Medical Center, immediately adjacent and connected by bridge to the University of Maryland Medical Center, joined the campus in 1993. Gudelsky Tower, the new high-tech University Hospital patient tower opened in 1994, and was followed in 1995 by complete restructuring and enhancement of the two-block hospital facade and main lobby. In 2002 the medical center opened the Harry and Jeanette Weinberg Building. The spacious 380,000 square foot building includes the new surgical facility with 19 state-of-the-art operating rooms, called the "OR of the Future," adult and pediatric emergency departments, an expanded diagnostic imaging department, a cafeteria and food court, a chapel, a patient resource center to access health information and community resources, and an employee learning center.

Completed in late 1995, the University of Maryland Biotechnology Institute's Medical Biotechnology Center occupies a 196,000 square foot facility. The center focuses on medical biotechnology research and training and serves as a catalyst for economic development in health related aspects of molecular biology and medical biotechnology at the basic, applied and clinical levels. The Health and Human Services Library opened in 1998; it provides cutting-edge service and amenities to its users and also serves as a Regional Medical Library of the National Library of Medicine.

The University of Maryland Baltimore

The University of Maryland Baltimore (UMB), is the founding campus of Maryland's public university system. It is a thriving center for education, patient care, research and community service. Seven graduate and professional schools — the Graduate School, the Dental School and Schools of Law, Medicine, Nursing, Pharmacy, and Social Work — together with the University of Maryland Medical System, R Adams Cowley Shock Trauma Center, the Baltimore Veterans Affairs Medical Center and the University of Maryland Biotechnology Institute's Medical Biotechnology Center — educate physicians, research scientists and many of the region's health care, law and social work practitioners.

With $324 million in sponsored program support in FY03, UMB is one of the fastest growing biomedical research centers in the country. The University of Maryland Baltimore is ideally configured to maximize collaborative opportunities with government agencies in tackling complex health care, public policy and societal issues. Its location within the Baltimore-Washington-Annapolis triangle—at the hub of one of the greatest concentrations of health care institutions, research facilities, government agencies and professional associations in the nation—offers a unique combination of strengths to comprehensively address regional problems with the resulting conclusions having the potential for global implications. Areas of multidisciplinary research, scholarship and community action include AIDS, aging, vaccine development, multiple sclerosis, schizophrenia, hypertension, lead poisoning, cancer, child abuse and homelessness, offering students a wide selection of field experiences.

Partnerships among university components and with the University of Maryland Medical Center and the Baltimore Veterans Affairs Medical Center continually strengthen interdisciplinary research, education and service endeavors.

Milestones

The foundation of the School of Medicine dates back to 1789 with the organization of the Medical Society of Baltimore and Baltimore physicians' awareness that their numbers were decreasing following the Revolutionary War. Foreseeing a potential opportunity for charlatans to "practice" the art of medicine, founders of the medical society began to train prospective physicians in their own homes, offering instruction in anatomy, surgery and chemistry. Soon faced with strong citizen protest of anatomical dissection, the physician-teachers petitioned the Maryland State Legislature to establish a college of medicine on a firm basis and under the protection of the law. A charter incorporating the College of Medicine of Maryland was approved by the Maryland General Assembly on December 18, 1807.

The fledgling College of Medicine of Maryland was in urgent need of a proper building, and a lottery was authorized—not to exceed $40,000—to benefit the medical college's building fund. Over the next 15 years, seven more lotteries were authorized to benefit the school.

Dr. John Beale Davidge, a native Marylander trained in Scotland, became the first dean and took the chair in surgery. His founding faculty were Dr. James Cocke (anatomy and physiology), Mr. James Shaw (chemistry) and Dr. Nathaniel Potter (theory and practice of

medicine). From Col. John Eager Howard, a Revolutionary War hero and doctors' first anatomical theater in violent opposition to the dissection of human cadavers.

From the school's very beginning there was strong emphasis on bedside teaching. The first class of seven received clinical instruction at the Baltimore Almshouse, a warehouse, a theater and infirmary for the poor.

Completed in 1812, Davidge Hall was built by Robert Carey Long, Sr., and modeled after the Pantheon in Rome. The first classes were held in the new building in 1813, the same year the College of Medicine of Maryland became the University of Maryland. In addition to its two expansive circular amphitheaters constructed one atop the other, Davidge Hall was built with dissecting cubbyholes, secret stairways and hidden exits that afforded early students and their professors safe passage from angry mobs. It is said that the 1812 British bombardment of Fort McHenry was viewed from the veranda of Davidge Hall, while in the harbor a few miles away Francis Scott Key was writing the "Star Spangled Banner." Davidge Hall was meticulously renovated in the early 1980's and recognized as a National Historic Place. In 1998 it was designated a National Historic Landmark.

The Baltimore Infirmary, forerunner of the University of Maryland Hospital, was built opposite Davidge Hall in 1823, on the site of the present Baltimore Student Union. It was the first hospital founded by a medical school for the express purpose of clinical instruction. It was also the site of the first intramural residency program established in the United States. Senior medical students lived in the hospital while helping to care for patients. The building was still in active use until 1973, when its clinics were moved into the newly constructed north-wing addition to the University of Maryland Hospital (circa 1934) and the old building razed.

In curriculum development, the University of Maryland School of Medicine enjoys a long and proud tradition as an innovative leader. Maryland was the first school to recognize the value of the basic sciences. In 1800, Dr. John Crawford was the first to vaccinate Baltimoreans against smallpox. As early as 1810, he had presented evidence of the contagious character of tuberculosis. The gift of Dr. Crawford's personal library became the nucleus of Maryland's extensive medical library.

In 1833 the school introduced the first preventive medicine course. The techniques of auscultation and percussion were taught at the School of Medicine for the first time in Baltimore as early as 1841, and in 1844 Dr. David Stewart, the first professor of pharmacy in the United States, initiated his lectures at Maryland. In 1848, Maryland became the first school to require anatomical dissection, followed six years later by the introduction of compulsory courses in gross and microscopic pathology. Compulsory courses in experimental physiology and microscopy were introduced six years later. A milestone in cancer research occurred in 1853, when Maryland's Dr. Francis Donaldson became the first person in America to advocate biopsy and microscopic diagnosis of malignancy. Maryland was the first to establish chairs in the diseases of women and children (1867) and diseases of the eye and ear (1873).

Mergers with the Baltimore Medical College in 1913 and the College of Physicians and Surgeons in 1915 enabled the school to expand its clinical facilities and faculty. Early in the twentieth century, Drs. James Rowland and Louis Douglas initiated off-site obstetrical care and home delivery, prenatal clinics and an Rh blood-typing laboratory, significantly improving infant and maternal health.

The School of Medicine has had its share of medical breakthroughs, including in more recent decades the first successful antibiotic treatment of Rocky Mountain spotted fever, the first cure for typhoid fever and the first laparoscopic ulcer surgery. In 1967, the school began one of the first formalized family practice residency programs in the country. In 1994, Maryland became the first medical school in the nation to integrate medical informatics into its curriculum.

The R Adams Cowley Shock Trauma Center, which opened in 1961, serves as a worldwide model for emergency medical treatment. The University of Maryland Greenebaum Cancer Center is a strong participant in new drug development and research, and virtually every important drug used in oncology has been tested in this program.

Today's University of Maryland School of Medicine is an exciting, vibrant institution where medical history continues to be written.

Education

The current medical student curriculum differs from more traditional curricula in several respects. During the first two years, the basic sciences are no longer taught as discipline-specific "courses" but are integrated and taught as "blocks," using interdisciplinary teaching with both basic and clinical science teachers. Lectures are limited to allow small group discussion and integration of basic material. Ample time is provided for independent study and the exploration of clinical and research opportunities outside of the classroom. Introduction to Clinical Medicine, which runs throughout the first two years includes areas such as Interviewing, Physical Diagnosis, Medical Ethics, Human Sexuality, and Health Economics. Third and fourth year of the medical student curriculum consist of clerkships, sub-internships, and electives designed to prepare the student to become an excellent clinician, as well as, introduce specialties across the spectrum of medicine. Particular emphasis is placed on competence in both inpatient and ambulatory settings and preparation for the first year of post-graduate training.

The ties between the medical school and the hospital enrich and enhance both medical education and health care. All physicians practicing at the University of Maryland Medical System and at the Faculty Professional Building have School of Medicine faculty appointments. All faculty members actively participate in the educational process of medical students and residents. A complete range of medical specialties provides more than 600 postgraduate positions at the University of Maryland Medical Center and affiliated hospitals. The Medical System includes a 724-bed teaching hospital, the Greenebaum Cancer Center and R Adams Cowley Shock Trauma Center on campus, as well as the James Lawrence Kernan and University Specialty Hospitals off campus.

Medical care and education are further enhanced by the location of the Baltimore Veterans Affairs Medical Center on this campus in a state-of-the-art hospital adjacent to the School of Medicine and the University of Maryland Medical Center. Together, these facilities serve as the major clinical training sites as well as sources of comprehensive health care for the local community and the state. The school also has established clinical affiliations throughout the region, giving students unusual flexibility in clinical experiences.

In an effort to nurture more interest in basic research and to meet the increasing demand for physician-scientists, the school offers a combined MD/PhD program in 10 medical disciplines and an MD/MS program in preventive medicine, and a new MD/MPH program. Although the schedule can be flexible, MD/PhD students typically complete the freshman and sophomore years of medical school, enroll as graduate students until PhD completion, and then begin their clinical clerkships. Combined MD/PhD degree studies can be completed within six to eight years.

Medical students in the track leading to the MD/MS in preventive medicine may complete the dual-degree program in five years. The fifth year is counted as one year of preventive medicine residency training by the American Board of Preventive Medicine. The MD/MPH program is designed to be completed in five years, though especially well-prepared students may be able to complete the requirements for both degrees in four years.

Graduate programs are offered at the master's and doctoral levels in the basic sciences. A baccalaureate program in medical and research technology is offered as well as a doctorate program in physical therapy, a master's program in genetic counseling and a number of interdisciplinary programs with both service and research components.

Continuing education programs are sponsored for practicing physicians throughout the region.

The School of Medicine offers students an excellent spectrum of resources and community experiences. Located along the Baltimore-Washington corridor, the school is in the midst of a great concentration of health care institutions, research centers, government agencies, professional associations, and a rapidly expanding biotechnology industry.

Research

The University of Maryland School of Medicine is one of the country's fastest growing research institutions, with total awards of $281.2 million in FY04. According to the Association of American Medical Colleges (2002-2003) reporting research expenditures, the School of Medicine ranks 9th among public medical schools, and 20th among all medical schools. Our clinical faculty continue to rank 4th in research expenditures per faculty in public medical schools. And, among all 125 medical schools, we rank 6th.

That funding, combined with our faculty's expertise and cutting-edge research, has produced some remarkable breakthroughs:

2004 Discovered the precise timing code used by brain cells to process sensory information. This information about brain language can be used to develop new interventions for neurologic diseases and injuries.
2004 Established the mechanism of masculinization of the brain, whereby signaling that molecules called protaglandins are necessary just before and after birth to hard wire the brain so that there is responsiveness to testosterone as adults.
2004 Showed that a special kind of heart pacemaker combined with a defibrillator significantly reduced the risk of death and hospitalization in patients with severe heart failure.
2004 Described the structure of anti-proliferative factor, a protein found in the urine of 95% of Interstitial Cystitis patients, and which may cause the disease. The disease affects about 1 million people in the United State and causes bladder pain, frequent urination and other urinary tract symptoms.
2004 Uncovered the mechanism whereby excess salt stimulates high blood pressure. The excess salt stiumulates the hormone ouabain which disables the sodium pump, causing sodium to accumulate in blood artery cells.
2003 Discovered that Celiac Disease is much more common than previously thought and affects 1 in 133 Americans. Affected individuals make an autoimmune response to the protein gluten which in turn causes gastrointestinal symptoms and nutritional problems.
2003 Identified the molecular mechanism of the inherited human cardiac arrhythmia disease called long Q-T Syndrome Type 4.
2003 Showed that 30-year old smallpox vaccine can be diluted many fold and still be effective, providing an immediate supply to be used in case of bioterrorist attack(s).
2003 Determined that blood levels of the proteins troponin T and C-reactive protein measure the risk of silent heart disease in patients on kidney dialysis awaiting kidney transplantation.
2003 University of Maryland Center for Vaccine Development is the first to advocate the safety of a new genetically engineered vaccine for anthrax.
2003 School of Medicine physicians are among the first in the country to perform a new procedure involving a stent to treat brain aneurysms.
2003 Physicians perform more kidney transplants than any other medical center in the United States.
2002 University of Maryland Center for Vaccine Development research confirms the effectiveness of existing supply of smallpox vaccine, assuring protection for millions.
2001 The School of Medicine receives a $20 million grant from The Bill & Milinda Gates Foundation to develop a safe and effective measles vaccine for children in developing nations.
2001 University of Maryland School of Medicine launches Mini-Med School – an annual series of free health classes for the community.
2001 A leader in telemedice, The University of Maryland is the first in the nation to use sophisticated video and computer technology to assess a stroke patient in real time during an ambulance ride.
2000 Discovered genetic biomarker for earlier diagnosis of esophageal cancer that may lead to better, more effective treatment.
2000 Introduced Intensity Modulated Arc Therapy (IMAT), which delivers a higher, more uniform concentration of radiation that attacks tumors while sparing surrounding organs and tissues.
2000 First to offer new treatment for inoperable liver cancer, TheraSphere, a therapy that uses microscopic glass beads to deliver radiation directly to tumors.

2000 Discovered receptor in the brain that is key to understanding the blood-brain barrier — the nearly impenetrable interface between the bloodstream and the brain.
1999 Performed more kidney transplants than any other medical center in the U.S., and became the second largest center for pancreas transplants.
1996-2000 Performed the most laparoscopic kidney removals from living kidney donors in the world.
1999 Developed first blood test to detect the enzyme telomerase, which can indicate the early spread of lung cancer.
1999 Developed a successful blood cleansing procedure to enable people on kidney dialysis to receive a kidney transplant without fear of immediate rejection.
1999 Discovered first clear link between autism and gastrointestinal disorders.

In the last seven years the School has consistently produced more than 50 invention disclosures annually and over 115 patents since 1999, establishing Maryland as a hub for life sciences activity in the region. Technologies developed at the School of Medicine have formed the basis for at least five Baltimore-area companies.

Other research projects are examining how intervention can make a difference for inner city youngsters trying to avoid the perils of HIV infection, drug use and street violence and tracking how intensive outreach can keep trauma victims from becoming repeat shock trauma patients.

Community Service

The School of Medicine's most important mission continues to remain the same after nearly two centuries: that of educating physicians to meet the health care needs of the people of Maryland and beyond. The School of Medicine is a vital part of the West Baltimore neighborhood in which it resides, and its faculty, staff and students are increasingly involved in activities that bring a better quality of life to its neighbors.

Each year, School of Medicine students provide hundreds of thousands of hours of service in hospitals, clinics, homeless shelters and schools throughout the state.

Program involvement includes:

•S.T.O.P. AIDS—Student/Teacher Outreach Program—sends volunteer students into Baltimore City Public Schools to discuss HIV prevention. Thousands of West Baltimore elementary and middle school students have been taught about the disease's medical and social implications.
•Domestic Violence Workshop—student volunteers sponsor a workshop that creates a heightened awareness of this complex problem and teaches future physicians how to spot the sometimes subtle signs of abuse.
•Health Care and the Homeless Project—allows students to spend time at shelters such as South Baltimore Station, providing health care screening and education.

Faculty members provide countless uncompensated hours of primary and preventive care to the residents of Baltimore through programs such as:

•Baltimore Alliance for the Prevention and Control of Hypertension and Diabetes—brings all of the resources of the University of Maryland physician community together to promote accessible, comprehensive hypertension and diabetes education, prevention and treatment strategies within the Baltimore community, with emphasis on the underserved.
•Focus on Kids—a community/university partnership that addresses the many issues, including HIV, drug use and violence facing pre-adolescents and adolescents.
•Paquin Family Health Center—a school-based health center at Paquin High School, Baltimore City's school for pregnant young women and teen mothers. Primary, pre- and post-natal care and psychosocial support are provided for mother and child.

The Campus and Beyond

The School of Medicine is an integral part of one of the country's first centers for professional education and research. Its urban campus, shared with six other professional schools and the Health Sciences and Human Services Library, the University of Maryland Medical System, the University of Maryland Biotechnology Institute's Medical Biotechnology Center and the Baltimore Veterans Affairs Medical Center, also hosts the Hope Lodge and Baltimore Ronald McDonald House, both offering low cost housing and a home-atmosphere for adult and pediatric outpatients and their families receiving medical treatment in the Baltimore area.

Opportunities abound for faculty and students to join with other health and human service professionals in interdisciplinary study, informal discourse and collaborative clinical practice and research, offering students a wide selection of field experiences.

In addition to professional opportunities, Baltimore offers a stimulating environment in which to live and study. Baltimore residents enjoy the sophistication of a large metropolitan city combined with easy accessibility to surrounding beaches, mountains and rural areas. The many attractions and resources of Washington, D.C., are less than a one-hour drive from Baltimore.

Having been the setting for significant events in the history of our country and a renowned foreign-commerce seaport, Baltimore maintains a strong feeling of the past, typified by the many charming neighborhoods of restored houses and an abundance of historic monuments and buildings. Within easy walking distance of the campus is the nationally acclaimed Inner Harbor area where Harborplace, the National Aquarium, Maryland Science Center, and the Pier 6 Pavilion share the festival atmosphere of the harbor with hotels, shops and restaurants, water taxis, and pleasure and tour boats. Both restored and newly constructed townhouses and condominium complexes share the waterviews, excitement and atmosphere of downtown living.

Warm weather months signal festival time in Baltimore with such annual offerings as Preakness Festival Week, Artscape, the Baltimore City Fair, the Flower Mart and the many ethnic festivals that celebrate the city's diverse populations. As a cultural center, Baltimore has offerings to please the most discriminating tastes, including a world-class symphony orchestra, excellent museums and libraries, professional theater, ballet and opera.

For sports fans Baltimore boasts a varied menu. Offerings include American League Baseball with the Orioles, professional football with the NFL Ravens, indoor soccer and ice hockey, NCAA and club lacrosse, horseracing and steeplechase and polo in the suburban counties. The home of the Baltimore Orioles, Oriole Park at Camden Yards, is but a two-block stroll from our campus, and the M & T Bank Stadium, home of the Super Bowl Champion Baltimore Ravens, is immediately adjacent to Camden Yards. There are numerous public golf courses in the city and surrounding counties, and the Baltimore harbor and nearby Chesapeake Bay offer unparalleled opportunities for boating, fishing and water sports. Gastronomy aficionados will delight in experiencing the seafood for which the region is famous.

ADMISSIONS INFORMATION:

Application

The University of Maryland School of Medicine is a participant in the American Medical College Application Service (AMCAS). Prospective students are invited to begin the application process by visiting the AMCAS Web site at http://www.aamc.org/students/amcas or by writing directly to the Association of American Medical Colleges at 2450 N Street NW, Washington, DC 20037-1123. AMCAS application materials are ready for distribution about mid-May of the year in which an individual plans to submit an application to the School of Medicine. All requests for a place in the first year class must be initiated by an AMCAS application.

For the School of Medicine, the AMCAS application is the first of a two-stage application process and must be submitted by November 1. All applicants, residents and nonresidents alike, are invited to submit a direct application (Stage II) after the AMCAS application has been received by the Office of Admissions. A non-refundable application fee ($70.00), payable to the University of Maryland School of Medicine, is sent only with submission of the second stage application form. The second stage application must be received in the Office of Admissions by December 1.

The application forms, supporting credentials and letters of recommendation should be filed as early as possible in the application period. Letters of recommendation may be sent to the Office of Admissions prior to submission of the second stage application. The deadline for submission of letters of recommendation is January 15.

The applicant must assume full responsibility for assuring that all required materials and the completed application packet are filed with and received by the Committee on Admissions. The applicant is expected to respond truthfully and completely to all questions on the AMCAS and School of Medicine application forms. An applicant who provides false or misleading information may be denied admission or, if enrolled before discovery of irregularity in the application process, maybe dismissed from the School of Medicine.

Early Decision Program

The University of Maryland School of Medicine has an Early Decision Program for applicants who are sure that their first choice of medical schools is the University of Maryland. The

Committee on Admissions interviews selected early decision applicants and makes a decision on these students before considering the regular pool of applicants. By applying for early decision, the highly qualified applicant avoids having to make numerous other applications. Applicants with less competitive academic credentials, or those without the support of their premedical advisor, are discouraged from applying through this program.

The early decision applicant must apply only to this school by the AMCAS deadline of August 1. Applicants must provide all supplementary information by September 1. Interviews will take place at the medical school between mid-August and late September. No one will be accepted without an interview. If offered a place by this School, the applicant cannot apply elsewhere. All decisions for this program are made by October 1.

The Committee on Admissions can make one of three decisions for each early decision applicant: 1) acceptance; 2) rejection; or 3) placement into the regular applicant pool for review at a later time. Each applicant will be notified promptly of the Committee on Admissions' decision so that those not accepted through this program can apply elsewhere.

Individuals who apply through the Early Decision Program cannot apply to any other medical school until they are notified that they have not been accepted through this program at the University of Maryland.

Applicant Selection Criteria

The University of Maryland School of Medicine can consider for admission only those students who are citizens or permanent residents of the United States and Canada. Occasionally, an applicant residing in the United States holds a visa permitting him or her to live in the United States indefinitely and to establish residency in one of the states. Applications are accepted from these individuals. Those individuals on a time-limited visa, such as a student visa, are not eligible for admission to the School of Medicine. Preference is given in the selection process to residents of the state of Maryland. However, the School of Medicine welcomes applications from individuals who reside throughout the United States and Canada. A significant number of non-resident applicants are invited to interview and are accepted to enter each freshman class. Diversity is highly valued in the educational process and applications are encouraged from individuals with non-traditional and disadvantaged backgrounds. The University of Maryland School of Medicine does not discriminate on the basis of race, sex, creed, religion, national origin, age or disability.

Selection criteria have been developed by the faculty of the School of Medicine and are closely allied to the School's mission and goals. Academic achievement, extra curricular activities, personal characteristics, recommendations from the premedical committee or college instructors and scores on the Medical College Admissions Test (MCAT) are all considered in the Committee's evaluation of an applicant. Academic achievement and/or high MCAT scores do not in themselves guarantee acceptance to the School of Medicine. Of significant concern to the Committee on Admissions are the applicant's character, personality and potential to perform well as a medical student and as a future physician. Personal integrity, emotional maturity and stability, motivation, intellectual curiosity, empathy and concern for others, leadership skills,

interests and activities outside the classroom, interpersonal communication skills and commitment to excellence are all carefully evaluated. Candidates for the MD degree must have the attitudes, knowledge and skills to function in a broad variety of interpersonal situations and to render a wide spectrum of patient care. Proficiency in both written and spoken English is required. Applicants are encouraged to review the School of Medicine's policy on Essential Requirements for Admission, Academic Advancement and Graduation.

Applications may be rejected from both residents and non-residents without an interview. Those applicants who possess competitive academic credentials and the personal characteristics noted above may be invited to interview. The interview provides the candidate with an opportunity to discuss their personal history and motivation for a medical career as well as any aspect of their application that merits special attention or explanation. Candidates should be prepared to discuss any and all aspects of their application. Interviewers are trained to specifically evaluate an applicant's maturity, adequacy of support systems, level of confidence in their abilities, intellectual curiosity, communication skills, motivation for medicine, depth of involvement in extra curricular activities and professional bearing during the interview, among other factors. Applicants are expected to demonstrate excellent communication skills, to be enthusiastic and knowledgeable about a career in medicine and to conduct themselves in an appropriate fashion during the interview day. The interview evaluations are the last important factor considered by the members of the Committee on Admissions in their deliberations regarding each applicant's candidacy for admission.

Admission to the First-Year Class

The student should plan a four year undergraduate curriculum with a suitable arts or science major leading to a bachelor's degree. The Committee on Admissions encourages all applicants to pursue a course of study that is rigorous, scholarly and focused on areas that are intellectually challenging and interesting to the applicant. The Committee on Admissions seeks to admit students with diverse academic backgrounds.

A minimum of 90 semester hours of acceptable college credit is required, exclusive of physical education and military science. Preference is given in the selection process to applicants who will have earned a bachelor's degree. Credit hours must be earned in colleges or universities whose names appear on the current list of Accredited Institutions of Higher Education as compiled by the National Committee of Regional Accrediting Agencies of the United States. The only courses accepted are those that are approved for credit towards a degree by the university or college attended. It is expected that preparation at a foreign college or university be supplemented by at least two years of course work in an approved university or college in the United States.

Successful completion of the following courses and credits is required prior to matriculation at the School of Medicine:

Course Semester Hours:

Biological Sciences	8	with lab
General Chemistry	8	with lab
Organic Chemistry	8	with lab
General Physics	8	with lab
English	6	

A grade of C or better is mandatory for all required courses.

No more than 60 hours can be accepted from accredited junior colleges and then only if those credits are validated by a college offering a Bachelor of Arts or Science degree. Advanced placement credits for science courses taken in high school may be accepted if the applicant's college (which grants the bachelor's degree) has given college credit for those courses. Other exceptions may be granted at the discretion of the Committee on Admissions.

Selected students who enter the School of Medicine from colleges that usually grant a baccalaureate degree after the successful completion of the first year of medical school are responsible for: (1) providing a certificate from the college or university certifying eligibility for this degree; and (2) meeting all requirements of the School of Medicine for advancement to the second year.

The MCAT must be taken no later than fall of the year preceding the desired year of entrance and must be taken within four years of the anticipated date of matriculation. Applications should write to MCAT Program Office, P.O. Box 4056, Iowa City, Iowa 52243 or visit their Web site at mcatreg@act.org for further information and registration materials.

A letter of recommendation from the undergraduate premedical committee or an officially designated premedical advisor is required. If the applicant's undergraduate college or university does not have a premedical committee or advisor, three letters of recommendation are required from faculty who have taught the applicant. Two of these letters must come from instructors who have taught the applicant in the sciences. Applicants who have earned advanced degrees or who have been out of school for a significant length of time should submit a letter of recommendation from each component of their education or work-related experience. Letters of recommendation should be submitted by individuals qualified to evaluate the applicant's accomplishments, productivity and character in an objective and critical manner. All letters of recommendation should be sent directly to the Committee on Admissions. Letters of recommendation are not to be sent to AMCAS.

Each applicant's credentials are evaluated by the Committee on Admissions to determine if an interview is to be granted. All interviews are to be conducted at the University of Maryland School of Medicine. Interviews are scheduled in advance by invitation. Applications may be rejected from both residents and nonresidents without an interview.

In its selection process, the Committee on Admissions must use the applicant's residency status that is in effect on the last day applications can be received (December 1). The University of Maryland Baltimore Office of Records and Registration is responsible for all decisions regarding residency. All questions, complaints or appeals regarding residency status should be directed to that office: 621 W. Lombard Street, Baltimore, MD 21201-1575; 410-706-7480, not to the School of Medicine Office of Admissions. Nonresidents who matriculate at the School of Medicine should plan to maintain that status throughout the four years of medical school. Current standards for reclassification to in-state status are rigorous and make reclassification difficult.

For further information regarding the admissions process at the University of Maryland School of Medicine the applicant is referred to the Office of Admissions Web site at http://medschool.umaryland.edu. For information regarding the admissions process in general, the applicant is referred to a book entitled "Medical School Admissions Requirements", which can be obtained from:

Association of American Medical Colleges
Section for Publication Orders
2450 N Street, N.W.
Washington, DC 20037-1131
Web Site: www.services.aamc.org

Policy on Advanced Standing

Students who have attended a Liaison Committee on Medical Education (LCME) accredited medical school in the United States or Canada are eligible to file application for admission to the third year class only. Applications must be submitted between February 15 and May 1 of the desired year of admission. Applicants for advanced standing must meet all of the current first year entrance requirements and must present undergraduate credentials comparable to those of students in the third year class into which they are attempting to transfer. Applicants will be considered for transfer only if they have attended a medical school with a curriculum that is comparable to that offered at the University of Maryland School of Medicine. All applicants must pass Step I of the United States Medical Licensing Examination before they will be allowed to matriculate at the School of Medicine. Residents of Maryland will be given preference in the selection process. The number of transfers accepted will be limited by attrition.

All applicants must furnish letters of recommendation from the dean and faculty of the medical school where they are currently enrolled. No student who has been dismissed from any medical school will be eligible for advanced standing unless his/her former dean submits a letter addressed to the Committee on Admissions confirming that the student has been reinstated in good standing and is eligible for promotion. No student can be considered who is not eligible for promotion at the time of transfer.

Persons who already hold the degree of Doctor of Medicine cannot be admitted to the medical school as candidates for that degree from this University. Individuals whose graduate work has been in the fields of osteopathic medicine or podiatric medicine are not eligible for advanced standing. Individuals whose graduate work has been in the field of dentistry may apply for advanced standing through the Oral-Maxillofacial Surgery/MD Program. Information regarding the combined program can be obtained by writing to:

Program Director
Advanced Dental Education
Office of Admissions and Students Affairs
Baltimore College of Dental Surgery
Room 4-A-22
666 West Baltimore Street
Baltimore, MD 21201
Web Site: http://www.dental.umaryland.edu/admissions

FINANCIAL INFORMATION:

Determination of In-State Status

An initial determination of in-state status for admission, tuition and charge-differential purposes will be made by the university at the time a student's application for admission is under consideration.

Students/applicants who are currently classified as nonresidents are encouraged to review the Policy On Student Classification for Admission, Tuition and Charge-Differential Purposes. Copies of the policy are available online at http://www.usmd.edu/Leadership/BoardofRegents/Bylaws/SectionVIII/VIII270.html, or at the Office of the Registrar, Suite 103, 111 S. Greene Street, Baltimore, MD, 21201, (410) 706-7481.

Tuition and Fees (2004 - 2005 academic year)

	Per Semester	**Per Year**
Application Fee*	$ X	$ 50.00
Tuition—In-State	9,178.50	18357.00
Tuition—Out-of-State	17,087.50	34,175.00
Student Activities Fee	39.00	78.00
Student Government Fee	7.50	15.00
Supporting Facilities Fee	224.00	448.00
Transportation Fee	14.00	28.00
Technology Fee	60.00	120.00
Hepatitis Vaccine (Fall—1st Year)	105.00	
TB Screening (Fall)	12.00	
Hospital Insurance (Individual) **	767.50/1074.50	842.00

Student Liability Insurance ***	260.00	
Disability Insurance	15.00	20.30
Dormitory Fee **** Contact Housing		
Graduation Fee—Seniors	545.00	
Laptop Computer—First Year	550.00	1,100.00
Laptop Computer—Second Year	495.99	991.98
(Billed for four semesters)		
Late Payment Fee 5% or $100.00 Maximum		

* An application fee of $50 should be submitted with the formal application to the School of Medicine. A partial tuition prepayment may be required before matriculation.

** Hospital insurance is required of all full-time students. A brief outline of the student health insurance program is furnished to each student. Students with equivalent insurance coverage must provide proof of such coverage by September 15 for fall registration and by February 15 for spring registration to Student and Employee Health to obtain a hospital insurance waiver. Rates quoted are subject to change. Students are charged for five months, September through January, with their fall tuition and for seven months, February through August, with their spring tuition.

*** Student liability (malpractice) insurance is required of all students.

**** Rate based on 10-month year. Transient rates available for summer.

NOTE: Costs are subject to change without prior notice.

Fees

The application fee partially defrays the cost of processing applications for admission and enrollment data in the professional schools. These fees are not refundable.

The tuition charges meet a portion of the costs for the educational program and supporting services.

Student activities fees are used to meet the costs of various student activities, student publications and cultural programs. The Student Government Association, in cooperation with the Dean's Office, recommends expenditure of the fees collected.

The supporting facilities fee is used in support of the expansion of various facilities on campus that are not funded or are partially funded through other sources.

The transportation fee helps to expand and enhance parking and shuttle services.

Graduation fees are charged to help defray costs involved with graduation and commencement.

Tuition and fees are due prior to the first day of class or a late payment fee of 5 percent, not to exceed $100, will be automatically added to the bill. On or before the due date, an installment payment plan is available for a $10.00 administration fee to students with a balance over $500. The plan divides payments into three equal installments. The first installment along

with the administration fee must be paid by the due date and the balance in two successive 30-day installments. The installment payment plan must be arranged in person in the student accounting office.

All checks and money orders should be made payable to the University of Maryland for the exact amount of the actual bill.

A service charge is assessed for dishonored checks returned unpaid by the bank.

- For checks up to $24.99—$5 service charge
- For checks from $25 and up—$25 service charge

Late registration fees defray the cost of special handling involved for those who do not complete their registration on the prescribed days. No diploma, certificate or transcript will be issued to a student until all financial obligations to the University have been satisfied.

The University reserves the right to make such changes in fees and other charges as may be necessary.

Registration

To attend classes at the University of Maryland, Baltimore campus it is necessary to process an official registration. All students are required to register each term in accordance with current registration procedures. Students with past due financial obligations will not be permitted to register for the next semester. Students who complete their registration after the deadline will be subject to a late registration fee.

Courses taken concurrently with a University of Maryland, Baltimore registration at another campus or institution must have program approval in advance by the appropriate University of Maryland, Baltimore officials. Off-campus registration forms are available in each dean's office and in the Office of the Registrar.

Although the University regularly mails bills to advance-registered students, it cannot assume responsibility of their receipt. If any student does not receive a bill prior to the beginning of a semester in which he or she has advance-registered, it is that student's responsibility to contact student accounting at 111 S. Greene Street, Suite 101 during normal business hours.

Students who register and subsequently decide not to attend must notify the Office of Student Affairs prior to the first day of instruction. If this office has not received a request for cancellation by 5:00 p.m. of the last day before instruction begins, the university will assume the student plans to attend and accepts the financial obligation.

After classes begin, students who wish to terminate their registration must contact the Office of Student Affairs. Students are liable for all charges applicable at the time of the withdrawal.

If a satisfactory settlement or agreement for settlement is not made with the business office within 10 days after a payment is due, the student is automatically barred from attendance at classes and will forfeit the other privileges of the School of Medicine.

Withdrawal

Students who wish to leave the School of Medicine at any time during the academic year are required to file a letter of resignation with the dean. The student must satisfy the authorities that he or she has no outstanding obligations to the school and must return his or her student identification card.

If the above procedures are not completed, the student will not be entitled to honorable dismissal and will forfeit the right to any refunds to which that student would otherwise be entitled. The date used in computing refunds is the date the Application for Withdrawal is signed by the dean.

Academic Standing

Students who voluntarily withdraw during an academic semester will be given no credit. Students are not permitted to resort to withdrawal in order to preclude current or impending failures. Their standing on withdrawal will be recorded at the Office of the Registrar. Students who withdraw from the medical school and later desire readmission must apply to the Committee on Admissions unless other arrangements have been made with the dean's written consent.

Refunds

Refund requests of students officially withdrawing from the school must be processed through the Office of Student Affairs. The amount of tuition and fees to be refunded to the student is dependent on time completed in the relevant semester.

A. Students are eligible for refunds upon withdrawal according to the following schedule:
•Withdrawal on or before the first scheduled day of class; 100% refund and cancellation of registration.
•Withdrawal after the first scheduled day or class through 10% of the semester — 90% refund.
•Withdrawal after the first 10% through the first 25% of the semester — 50% refund.
•Withdrawal after the first 25% through the first 50% of the semester — 25% refund.
•Withdrawal after the first 50% of the semester — no refund.

Schedules indicating the cut-off dates each semester for every level of refund will be made available by the Office of Student Accounts.

B. Withdrawing students who received financial aid to pay for the tuition and fees assessed will have refunds returned to the aid program from which the charges were paid in the following order:

Federal Unsubsidized Stafford Loan
Federal Subsidized Stafford Loan

Federal PLUS Loan
Federal Perkins Loan
Federal Pell Grant
Federal Supplemental Education Opportunity Grant
Institutional Loans, HPSL, etc.
Maryland State Scholarship Programs
Institutional Scholarship Programs
Private Scholarship Programs

- Refund amounts over and above those amounts repaid to the various aid programs will be returned to the student.
- In calculating the return of federal financial aid, such return may cause a balance owed by the student to the University or to the student's lender. Any unpaid charges owed by the student as a result of the Title IV calculation will remain as the student's responsibility and will subject to collection.

Additional Notes:
•Aid that has been awarded and certified before the withdrawal date may be used to pay required tuition and fees, even if it has not yet been disbursed.
•Federal financial aid recipients who cease to attend classes without officially withdrawing will have an unofficial withdrawal date determined for them by the financial aid office on a case-by-case basis, and that date will then be used in calculating the refund.

Leaves of Absence
Students who are in good standing may be granted a one-year leave of absence with permission from the dean. Longer leaves can be arranged only under special circumstances with the exception of those students in the combined MD/PhD program.

Required Equipment

Dissecting Instruments
At the beginning of the first year, all freshmen must possess a complete set of dissecting instruments similar to those on display at the campus bookstore.

Laptop Computer
Entering freshman will be required to purchase/lease a laptop computer from the University of Maryland. Information regarding specific system requirements and purchasing, leasing and financing options will be provided in June each year. Students are advised not to purchase a laptop computer outside the University.

Microscope
Microscopes will be provided by the medical school.

Other Equipment
By the second year, medical students are required to have an ophthalmoscope, otoscope, a blood pressure cuff and stethoscope. The estimated cost of these items, plus other essentials such as lab coats, is $400 to $450.

Financial Assistance

The School of Medicine's financial aid program is available to medical students who demonstrate financial need. Aid programs are centrally administered by the Office of Student Financial Aid, located at 111 S. Greene Street, Suite 104. To qualify for aid, students must apply annually and continue to meet certain eligibility requirements. To apply for financial aid, complete a Free Application for Federal Student Aid (FAFSA) and send it to the Federal Processing Center or apply online at www.fafsa.ed.gov. To obtain an application, call or visit the Office of Student Financial Aid.

Student Financial Aid
University of Maryland Baltimore
111 S. Greene Street
Suite 104
Baltimore, Maryland 21201
(410) 706-7347
Email: aidtalk@umaryland.edu

Aid packages often include a combination of loans, grants, scholarships and part-time employment designed to meet a student's needs. In addition to school resources, outside funding agencies make financial assistance available to qualified medical students. Priority filing date is March 15.

Student assistance is awarded on the basis of demonstrated financial need. Eligibility for financial aid is dependent upon the student maintaining satisfactory academic progress. When determining the amount to be awarded, the following are considered: (1) income, assets and resources of the student; (2) support available to the student from non-university sources; and (3) the costs reasonably necessary for full-time attendance at the school. Some programs also consider income, assets and resources of the student's parents.

University and Medical School Funds

University Grants: Need-based grants awarded by Financial Aid Office.

Dean's Scholarship: Funds provided by the School are awarded primarily to non-resident students.

Medical Alumni Association: Interest-free loans are available to students on the basis of financial need.

Private and Endowment Funds: From bequests and private donations, the School of Medicine has established private and endowment accounts to provide fellowships, scholarships and loans for students on the basis of their academic achievement and financial need. The amounts of these fellowships, scholarships and loans vary and are awarded on an annual basis in accordance with school policy.

The availability of support from each of the funds listed below is dependent upon the income generated. Moreover, since many of the funds are governed by specific provisions set forth by the donors, awards must be made accordingly.

Scholarships
APPM Auxiliary Scholarship
Balder Scholarship Fund
James E. Bond Memorial Fund
Dr. Robert W. Buxton Scholarship
Class of 1969 Scholarship Fund
Percy M. Chaimson Scholarship Fund
Israel and Cecilia E. Cohen Scholarship
Dr. William H. Crim Scholarship
Isaac C. Dickson Scholarship Fund
Dodge Fund
Marcia Thomas Duncan Medical Scholarship
A. Lee Ellis Scholarship
Arthur Wright Erskine Scholarship
Dr. John E. Esnard Endowment
Sharon Fox Scholarship
Samuel Leon Frank Scholarship
Milton Ginsberg Scholarship Fund
Harry Gudelsky Fund
Horace Bruce Hetrick Scholarship
Margaret A. Hicks Scholarship
Charles M. Hitchcock Scholarship
Donald J. Hobart Scholarship
G. D. Jackson Scholarship
Leo Karlinski Scholarship
Elsie Larrimore Scholarship
Emmett and Ruth Light Scholarship
Dr. Alex J. and Clara Maysels Scholarship
Dr. James N. McCosh, Jr. Memorial Scholarship
Nataro Family Scholarship Fund
Frederick and Anne Nichols and Edwina Justin Fund
Henry Rolando Scholarship Fund
Morton and Elaine Schwartz Scholarship
David Street Memorial Scholarship
Dr. Charles Robert Thomas
Michael Vinciquerra Trust Scholarship

Clarence and Geneva Warfield Scholarship
Walter N. Winters Scholarship
Randolph Winslow Scholarship
W. R. Winslow Residency Trust
Henry Zoller, Jr. Scholarship

Loan Funds
Balder Foundation Fund
Class of 1916 Memorial Loan Fund
Class of 1935 Student Loan Fund
Jay W. Eaton Loan Fund
Dr. Wetherbee Fort Loan Fund
Gold-Steinberg Memorial Loan Fund
Isaac Gutman Loan Fund
Sean Peter Houlihan Memorial Fund
Robert Wood Johnson Foundation Loan Fund
W.K. Kellogg Loan Fund
William and Sarah Kraut Loan Fund
Michael H. Lipman Loan Fund
Joseph Lipskey Loan Fund
Jacob B. and Shirley K. Mandel Loan
Drs. Charles W. and Kathleen R. McGrady Student Loan Fund
Medical Alumni Association Student Loan Fund
Edward and Lina Meirhoff Loan Fund
Dr. William B. Rogers Student Loan Fund
Jessie Smith Noyes Loan Fund
Charles Pfizer Loan Fund
Dr. F. Mason Sones Jr. Memorial Student Loan Fund
Webster M. Strayer Loan Fund
Jimmie Swartz Foundation Loan Fund
Jay Whitman Memorial Student Loan Fund

Outside Sources

Central Scholarship Bureau offers interest-free loans in amounts up to $3,500 per year (maximum total of $8,000) to qualified Baltimore City and Baltimore County residents.

Central Scholarship Bureau
c/o #108 Bristol House Apartments
4001 Clarks Lane
Baltimore, Maryland 21215
(410) 358-8668

Primary Care Loans may equal tuition plus $2,500 annually. Interest accrual at 5 percent and principal payments are deferred until one year after graduation at which time both interest and principal payments begin. Both interest and principal may also be deferred for internships and

residencies and for up to three years of service in the uniformed services (including National Health Service Corps) and the Peace Corps. Interest accrues from beginning of repayment period. Recipients must enter and complete a residency training program in primary health care no later than four years after graduation from the institution. Recipients must also practice primary health care until the loan is repaid in full and provide annual certification that they are practicing primary health care. Primary health care is defined as family medicine, general internal medicine, general pediatrics, preventive medicine or osteopathic general practice.

Maryland residents may apply for Maryland State Scholarships by completing the FAFSA application. All applications must be received by March 1. Senatorial and House of Delegates awards are available. Student may also apply for the Professional School Scholarship. Applications are provided through the Financial Aid Office.

National Medical Fellowships are need-based awards to minority medical students. For further information and applications write:

National Medical Fellowships
250 West 57th Street
New York, New York 10019

Federal Work-Study Program provides jobs for students who need financial aid and who choose to earn part of their educational expenses. Jobs are arranged either on or off campus with a public or private nonprofit agency. Eligible students may be employed for as many as 20 hours per week. To be eligible for Federal Work-Study a student must apply for financial aid and demonstrate financial need.

Federal Perkins Loans are made by the University to students. Students are awarded between $2000 - $6000 annually not to exceed the aggregate legal loan maximum of $30,000 (including undergraduate borrowing). The annual interest rate is 5 percent. Interest does not accrue until repayment begins.

Federal Subsidized Stafford Loans (formerly Guaranteed Student Loans) are made by private lenders. The annual legal loan maximum for graduate students is $8,500. The aggregate loan limit is $65,500 including graduate and undergraduate debt. Current interest rate for new borrowers will be variable, but not higher than 8.25 percent. Interest does not accrue until repayment begins. Current in school interest rate is 2.77%

Federal Unsubsidized Stafford Loans are made by private lenders. Medical students may borrow up to $30,000 a year with an aggregate limit of $179,000. The interest rate is variable and will be adjusted annually. Current rate is 2.77%. Interest will accrue on the loan from the date of disbursement and may be paid quarterly or annually, or may be capitalized.

Alternative Loans are designed to meet the remaining student's eligibility after both Federal Subsidized and Unsubsidized Stafford Loans have been borrowed. Alternative loans are credit based. Students are strongly encouraged not to borrow this loan unless absolutely necessary.

Federal regulations governing financial aid are subject to change, and it is suggested that interested applicants contact the Financial Aid Office to ensure having the most recent information.

ACAMEMIC INFORMATION

Accreditation

The University of Maryland, Baltimore is accredited by the Middle States Association of Colleges and Schools. The School of Medicine is accredited by the Liaison Committee on Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.

General Rules

- The University of Maryland School of Medicine authorities reserve the right to make changes in requirements for admission, curriculum, standards for advancement and graduation, fees and rules and regulations.
- Matriculants are required to accept the provisions of the Judicial Board, as well as the school's Essential Requirements for Admission, Academic Advancement, and Graduation and agree to assume their obligations prior to registration.
- Students who report for classes later than one week after the scheduled time will be permitted to begin work only by permission of the dean. Attendance at all scheduled classes is expected.
- Notice of change of address should be submitted promptly to the Office of Student Affairs and to the Office of the Registrar.
- All new students, whether they are admitted to the first-year class or with advanced standing, are expected to attend an orientation for new students.

Grades and Promotion

Final grades for courses in all four years are recorded as follows unless otherwise specified by course director:

A Excellent
B Very Good
C Satisfactory
D Unsatisfactory — "D" grades are remediable only by examination or other appropriate remediation with a maximum grade of "C" possible on the portion of the course remediated. The final grade will be determined by the course director.
F Fail — Requires repeat of the course or an approved equivalent.
Inc Incomplete — This designation is used only when mitigating circumstances exist; e.g., illness or unavoidable absence has prevented the student from completing the course on time. It is to be viewed as a non-prejudicial entry on the student's record; the grade "Inc" remains on the official student transcript.

An award of "Honors" is given to a student who receives a final grade of "A" and performs at a clearly outstanding level and/or who performs an additional scholarly effort. Specific criteria for honors are determined by the course director or course committee.

Other grading policies by specific courses such as Pass/Fail grading are announced to the class at the beginning of the course.

In addition to the final objective grade and the "Honors" category, the student's overall performance is evaluated subjectively. The new curriculum, with added small group activities and problem-based learning groups, allows for such assessment in the basic science years. Clinical years' activities are in small groups with close mentoring. A passing grade in any course may be contingent upon a certain level of attendance and participation above and beyond examination performance. Appropriate evaluation forms are designed for this purpose.

Established rules for advancement and dismissal during all four years have been approved by the faculty and student body representatives of the School of Medicine. All regulations related to grading, advancement and dismissal are included in the Academic Handbook given to all entering students at orientation.

The faculty reserves the right to determine whether a student may withdraw, repeat, advance or graduate on academic or moral and personal grounds, including traits of character.

Equal Opportunity

The University of Maryland Baltimore is actively committed to providing equal educational and employment opportunity in all of its programs. It is the goal of the University to assure that women and minorities are equitably represented among the faculty, staff and administration of the university, so that its work force reflects the diversity of Maryland's population.

All employment policies and activities of the University of Maryland Baltimore shall be consistent with federal and state laws, regulations and executive orders on nondiscrimination on the basis of race, color, religion, age, ancestry or national origin, sex, sexual orientation, handicap, marital status and veteran status. Sexual harassment, as a form of sex discrimination, is prohibited among the work force of the university.

Unethical Conduct

In order to matriculate and/or graduate, students must be of good moral character, consistent with the licensure requirements of the state of Maryland for physicians, and must demonstrate character traits consistent with competent performance as a physician. The school reserves the right to dismiss or fail to graduate any student whose actions or overall academic performance, including clinical performance, do not demonstrate good moral character and ability to function effectively as a physician. Such action may be taken notwithstanding a student's compliance with standards for advancement and graduation set out in the School of Medicine grading policy.

Graduation Rate

The School of Medicine's graduation rate is 97%. This figure represents those students actively pursuing their MD degree. They do not include those students in the MD/PhD track (usually six years) or those students who are granted a year off to engage in research, etc.

Salary and Employment Information

A high percentage of graduates enter the practice of medicine after completion of residency training. There appears to be a moderate excess of physicians in some disciplines of medicine and in some geographic areas. However, the overall need for persons holding the MD degree is such that all graduates of the School of Medicine may expect a satisfactory income.

Prizes and Awards

- American Medical Women's Association Scholarship Achievement Awards are presented to women students who graduate in the top 10% of their class, or, under the non-graded system, are honor graduates.
- The Elijah Adams Award for Excellence in Biological Chemistry is presented to the freshman medical student who has achieved an honors grade in the biochemistry and molecular biology course and has written a paper judged of the highest quality by the faculty of the department.
- The Wayne W. Babcock Award for Excellence in Surgery is awarded to a graduating senior for outstanding performance in surgery.
- The Balder Scholarship Award for Outstanding Academic Achievement is presented to the graduating senior with the highest academic record throughout the medical course.
- The Leslie B. Barnett Memorial Medical Student Research Fellowship is a competitive award to provide funding for a student to conduct research.
- The Eugene Sydney Bereston Award for Excellence in Dermatology is awarded to the graduate with outstanding accomplishments and interests in dermatology.
- The J. Edmund Bradley Award for Excellence in Pediatrics recognizes the graduate with both the leading academic record in pediatrics and the characteristics most admired in a pediatrician.
- The Eugene B. Brody Award for Excellence in Psychotherapy honors a graduate with outstanding skill in psychotherapy.
- The C. Jellef Carr Award for Excellence in Pharmacology is presented to the sophomore medical student who has achieved an honors grade in the medical pharmacology course and has written a paper judged of the highest quality by the faculty of the department.
- The Louis, Ida and Samuel Cohen Award for Personal Attributes of Scholarship, Ability and Compassion for Patients is presented to a graduate with superior scholarship and scientific knowledge of internal medicine and understanding and compassion for patients.
- The Dean's Award for Excellence in Research is presented to the graduating senior who has performed the most notable research during the course of the standard MD program.
- The Donaldson Prize for Excellence in Pathology honors the graduating senior who has demonstrated excellence in didactic and laboratory work in the discipline of pathology.
- The Louis Harriman Douglass Award for Excellence in Obstetrics and Gynecology recognizes the graduating senior with an outstanding academic record and a particular interest in obstetrics and gynecology.
- The Robley Dunglison Award for Excellence in Preventive Medicine honors the graduating student who has demonstrated outstanding competence in the fields of preventive medicine and public health.

- The Society for Academic Emergency Medicine Award for Excellence in Emergency Medicine recognizes the senior who has captured the essence of the ideal emergency physician by demonstrating high skill, equanimity and kindness in an environment which requires quick, clear thinking and action.
- The Faculty Gold Medal for Outstanding Qualifications for the Practice of Medicine honors a graduate with outstanding scholarly accomplishments and those qualities of humanity and dedication most desirable in a physician.
- The Jacob Finesinger Award for Excellence in Psychiatry honors the graduate who has demonstrated outstanding skills in general psychiatry.
- The Harlan I. Firminger Award for Excellence in General and Systemic Pathology is presented to the student with the highest performance in the sophomore pathology course.
- The A. Bradley Gaither Memorial Award for Excellence in Genito-Urinary Surgery recognizes the graduate who excelled during the senior clerkship in genito-urinary surgery.
- The Geriatrics and Gerontology Education and Research Program Award for Excellence in the field of aging recognizes a professional undergraduate or graduate student who has demonstrated outstanding interest and commitment to the care of older persons.
- The Dr. Sheldon E. Greisman Award is presented to the student whose performance in the first-year physiology course is deemed outstanding.
- The Dr. Jeremy Hallisey Prize awarded at commencement to graduating students pursuing a career in anesthesiology who best demonstrate the quality of compassion. Provided no graduating seniors pursuing a career in anesthesiology, the prize shall be awarded to graduating seniors pursuing a career in surgery who best demonstrates the quality of compassion.
- The William Alexander Hammond Award for Excellence in Neurology is awarded to the graduating senior with outstanding accomplishments in neurology.
- The Healthcare Foundation of New Jersey Humanism in Medicine Awards is given to a graduating senior who promotes the integration of humanism in the delivery of care to patients and their families.
- The Dr. Martin Helrich Prize for Excellence in Anesthesiology recognizes the graduate with the highest academic distinction during the senior clerkship in anesthesiology.
- The Dr. Leonard M. Hummel Memorial Award for Excellence in Internal Medicine honors a graduate with outstanding qualifications in internal medicine.
- The William D. Kaplan, MD award is presented to a graduating senior who best combines humanism with the clinical study of medicine.
- The Edward J. Kowalewski Award for Excellence in Education and Training in Family Practice is presented to the fourth-year student who has demonstrated special interest and high academic achievement in family practice.
- The Abraham Lilienfeld Award in Epidemiology and Biostatistics is awarded to the graduating student with an outstanding performance in the courses given by the department in the first two years of medical school.
- The William H. Mosberg, Jr., MD Award for Neurosurgery is awarded at commencement to a student who demonstrates academic excellence as well as personal distinction.
- The Dr. I. Earl Pass Memorial Award for Exceptional Proficiency in Internal Medicine recognizes a member of the graduating class with an outstanding performance in medicine.
- The Dr. Milton S. Sacks Award in Hematology is awarded to the graduate with the most distinguished record in hematology.

- The Society for Academic Emergency Medicine Award for Excellence in Emergency Medicine is given to the senior medical student who has captured the essence of the ideal emergency physician by demonstrating high skill, equanimity, and kindness in an environment which requires quick, clear thinking and action.
- The Student National Medical Association Service Award is presented to the graduating senior who has demonstrated leadership in the Student National Medical Association and made outstanding contributions to the minority community.
- The Summa, Magna and Cum Laude Awards of Honor are presented to those candidates for graduation who have exhibited outstanding qualifications for the practice of medicine during their four academic years.
- The Uhlenhuth Award for Excellence in the Anatomical Sciences is awarded in recognition of the graduate with the highest academic record in the anatomical sciences.
- The Rudolf Virchow Award for Research in Pathology is awarded to graduates who have made outstanding contributions to research in the field of pathology.
- The Joseph E. Whitley Award is given for academic excellence in radiology.
- The Hans R. Wilhelmsen Prize for Outstanding Achievement in Surgery is awarded to the graduate with the highest academic record in surgery.
- The Charles L. Wisseman Jr., Award for Excellence in Microbiology and Immunology is presented to the student with the highest academic record in microbiology.
- The Theodore E. Woodward Prize in Internal Medicine is the highest award in internal medicine. It is presented to the graduate who has an excellent academic record in the discipline of internal medicine and has displayed the attributes of compassion and dedication in the care of patients.
- The Theodore E. Woodward Award in Physical Diagnosis is awarded at commencement to the graduate whose sophomore performance in physical diagnosis best exemplified the desirable combination of factual information, clinical skills and humanity, and characteristics of an accomplished physician.

The Marshall L. Rennels Award for Excellence in Neuroscience is awarded in recognition of the graduate with the most distinguished accomplishments in neuroscience and who best exemplifies the character and scholarship of Dr. Marshall L. Rennels, Professor of Anatomy and Neurobiology, one of the most decorated teachers in the history of the school.

Graduation with Honors

Grade point averages (GPA's) are computed in this medical school for two purposes only: nomination of students for election to Alpha Omega Alpha Honor Society (AOA) and for determination of commencement honors. GPA's are not made public or reported to residency programs, although general levels of class standing are reported to residency programs as are evaluations of professional behavior. The GPA is calculated on a scale of 1-to-5 with 1 = C, 3 = B and 5 = A. The third year is given a somewhat higher weighting than the first two years for purposes of determining commencement honors. Although grades of honors are not computed into the GPA, students must have a minimum number of honors grades on their transcript in order to be eligible for graduation with honors. Grades from courses taken during the senior year are not counted numerically in determination of graduation honors.

Professionalism in Medicine

As changes in our nation's healthcare and healthcare delivery systems continue to occur, professionalism in medicine is increasingly debated. There are some who say that physicians are losing their professionalism in our highly technical and managed care environment. Medicine has gone through a dramatic transformation over the last four decades; science has raced ahead with astonishing speed to close in on some of the fundamental mysteries of life.

With the advancement of technology and changing market forces, medicine has become complicated and somewhat institutionalized. The health care marketplace is pressuring physicians to cut costs, increase productivity and support the bottom line. The primacy of the patient-physician relationship is being sorely tested. We will emphasize the importance of professionalism in our medical school curriculum to ensure that all students understand professionalism and accept its obligations. Developing effective physician/patient relationships will become of paramount importance. Now we even struggle with definitions of what is a profession? James M. Gustafson described a profession as follows:

• A profession is characterized by mastery of an extensive body of technical knowledge and concepts or theories that explain that knowledge and guide its applications to different circumstances,

• Professions are institutionalized, and thus there are many social controls over professional activity, and,

• Professions are service oriented. They exist to meet particular human needs of individuals and communities.

One of Abraham Flexner's concepts of professionalism, paraphrased by Dr. Richard Foa was "profession will tend to exist or 'be contrived' to achieve societally defined goals rather that to serve the self-interests of its members. Professions are to be 'increasingly altruistic in motivation.'

Students must be prepared to deal with all the competing forces of a rapidly changing health care system, and demonstrate the qualities of professionalism during medical school and throughout their careers. It must be clear that we are committed to the best outcome for the patient. Each student must be constantly on guard to protect, defend and advocate for patients. The common ground on which all physicians must stand is that the needs of our patients must come first and foremost.

Each year the School of Medicine holds a White Coat Ceremony, where first-year medical students receive their white coats, as a symbol marking the beginning of their new role as a medical healer and emphasizing the responsibility they are accepting for the care and healing of patients. We constantly re-enforce the importance of professionalism, and remind ourselves that as physicians we are granted extraordinary powers by patients and by society.

PROGRAM OF STUDY

Broadly stated, the educational objectives of the School of Medicine are:

- To educate students intensively and broadly in the clinical and scientific aspects of medicine.
- To prepare students to engage in a lifetime of learning in order that they may successfully adapt to a changing world.
- To achieve a high level of professional competence and social awareness.

- To provide opportunities for students at every level of training to pursue areas of special interest for intellectual stimulation and/or career advancement.
- To encourage the development of highly competent primary care physicians, clinical specialists and scholars in basic and clinical research, teaching, and academic administration.

Curriculum

First and Second Years: The freshman year begins with a nine-day introduction that includes orientation, informatics and the start of the Introduction to Clinical Medicine course. This initial time is spent getting the students comfortable in the role of medical student and beginning the process of becoming a physician. ICM as the course is known continues throughout the first two years of medical school and includes such topics as Human Sexuality, Interviewing, Physical Diagnosis, Medical Ethics, and Medical Economics. The initial introductory period is followed by a nine-week block on "Structure and Development," which offers a comprehensive overview on the morphological and developmental organization of the body, including the traditional disciplines of anatomy, histology, and embryology. behavior in the prevention, incidence, Following this, a nine-week block, "Cell and Molecular Biology," presents the fundamentals of biochemistry, cell biology, molecular biology and human genetics and correlates them with clinical issues. Functional Systems, which includes the major principles of human physiology and the clinical correlations of these, follows for ten weeks with six weeks of Neuroscience completing the first year. Neuroscience covers both structural and functional aspects of the nervous system.

The integrated curriculum continues in the second year when sophomore students take three blocks which include Host Defenses and Infectious Diseases (10 weeks) and Pathophysiology and Therapeutics I and II (for a total of 24 weeks). Pathophysiology and Therapeutics, organized by body systems, contains neuroscience and psychiatry, cardiovascular, gastrointestinal, reproductive, pulmonary, renal, endocrine, neoplasia, locomotive and hemopoietic sections. The sophomore year is characterized again by two hours of lecture per day, and two hours of small group or laboratory per day. Introduction to Clinical Medicine continues with a primary focus on Physical Diagnosis. Passage of Step I of the United States Medical Licensure Examination is required for proceeding to the clinical years.

Third and Fourth Years: The two clinical years are viewed as a single unit with the student assuming progressive responsibility for patient care. The clinical experience consists of the following clerkships: Medicine (12 weeks), Surgery (12 weeks), Family Medicine (4 weeks), Obstetrics, Gynecology and Reproductive Sciences (6 weeks), Pediatrics (6 weeks), Psychiatry (4 weeks), Neurology (4 weeks). As noted, students take all of these rotations according to individual schedules. The sum of these experiences provides a 48-week introduction to clinical science. Students are evaluated based on clinical performance and end-of-clerkship examinations. Approximately one third of the third year is spent in ambulatory care settings.

The 32-week fourth year that follows includes four four-week electives. The student may take a maximum of eight weeks of electives off-campus. Eight weeks must be spent in student sub-internships in one of four clinical fields: medicine, surgery, pediatrics or family practice. Here the student has an opportunity for direct, primary patient care responsibility over a

prolonged period of time. These rotations are offered at the University of Maryland Medical System and in approved affiliated hospitals. The third component of the fourth year is a consecutive eight-week experience in an ambulatory setting. The ambulatory rotation is designed to be completed in a rural or underserved area supplemented by teaching in preventive medicine.

The 80-week combined clinical years program provides a strong grounding in clinical science with a progressive opportunity for primary patient care responsibility. The curriculum is designed to prepare the medical student for the increasing responsibility demanded by the specialty residency programs throughout the country.

The Curriculum Coordinating Committee, composed of course and clerkship leaders, key faculty educators and student body representatives, has the responsibility of regularly monitoring and reviewing the curriculum and recommending changes deemed appropriate.

Curriculum at a Glance

Curriculum Organization
Year I 37 weeks
COURSE TITLE
I ORIENTATION (9 days)
Informatics, Introduction to Clinical Medicine

II STRUCTURE AND DEVELOPMENT
(49 days)

Participating departments/divisions: Anatomy and Neurobiology, Surgery, Diagnostic Radiology
Areas of study: Human gross anatomy, embryology and histology

III CELL AND MOLECULAR BIOLOGY
(44 days)

Participating departments/divisions: Biochemistry and Molecular Biology, Medicine, Human Genetics, Anatomy and Neurobiology, Pharmacology and Experimental Therapeutics, Cancer Center
Areas of Study: Protein structure and function, cellular metabolic pathways, cell signal transduction, cell microanatomy, human genetics, molecular biology

Year I (continued) COURSE TITLE
IV FUNCTIONAL SYSTEMS
(49 days)

Participating departments/divisions: Anesthesiology, Internal Medicine, Neurology, Obstetrics, Gynecology and Reproductive Sciences, Pediatrics, Physiology, Surgery

Areas of study: Cell, cardiovascular, endocrine, gastrointestinal, renal, respiratory and integrative function

V NEUROSCIENCES
(29 day)

Participating departments/divisions: Anatomy and Neurobiology, Biochemistry and Molecular Biology, Neurology, Physiology, Surgery

Areas of Study: Development, structure and function of nervous tissues, anatomical organization of CNS, sensory and motor systems, higher functions, concepts in clinical neurology

ICP INTRODUCTION TO CLINICAL MEDICINE
(1/2 day per week and selected full days throughout the year)

Participating departments/divisions: Family Medicine, Pediatrics, Psychiatry, Internal Medicine, Surgery, Neurology, Surgery, Obstetrics/Gynecology, Emergency Medicine

Areas of study: Ethics, nutrition, intimate human behavior, interviewing and physical diagnosis issues, topics relevant to delivery of primary care, doctor-patient relationship

Year II

I HOST DEFENSES AND INFECTIOUS DISEASES
(52 days)

Participating departments/divisions: Epidemiology and Preventive Medicine, Medicine, Microbiology and Immunology, Pathology, Pediatrics, Pharmacology and Experimental Therapeutics

Areas of Study: Immunology, bacteriology, virology, parasitology, mycology

II PATHOPHYSIOLOGY AND THERAPEUTICS I and II
(108 days)

Participating departments/divisions: Anesthesiology, Cancer Center, Dermatology, Diagnostic Radiology, Epidemiology and Preventive Medicine, Medicine, Neurology, Obstetrics, Gynecology and Reproductive Sciences, Pathology, Pediatrics, Pharmacology and Experimental Therapeutics, Psychiatry, Surgery

Areas of study: Bone, cardiovascular, dermatology, endocrine, gastroenterology, hematology, nervous, pulmonary, renal and reproductive systems

INTRODUCTION TO CLINICAL MEDICINE
(1/2 day per week and selected full days throughout the year)

Participating departments/divisions: Medicine, Family Medicine, Pediatrics, Psychiatry, Neurology, Ophthalmology, Obstetrics, Gynecology and Reproductive Sciences

Areas of Study: Fundamental aspects of history-taking and physical examination, medical ethics, medical economics

Year III	48 weeks
TIME	COURSE TITLE
12 weeks	Internal Medicine
12 weeks	Surgery/Surgical Subspecialty
4 weeks	Family Medicine Clerkship
6 weeks	OB/GYN Clerkship
6 weeks	Pediatrics Clerkship
4 weeks	Psychiatry Clerkship
4 weeks	Neurology Clerkship

Year IV	32 weeks (tentative schedule)
APPROXIMATE TIME	COURSE TITLE
8 weeks	AHEC
8 weeks	Sub-Internship
16 weeks	Electives

Combined MD/PhD Program

Training for Medical Scientists of the Future

In modern medicine the battleground for the fight against many diseases is found at the molecular level, on the surface or interior of cells or in the DNA of the human genome. Other important health problems involve complex studies of large populations within our society. Research into the mechanisms of human disease and the factors that maintain and restore human health requires investigators with interests and training in both basic science and clinical medicine.

The goal of the combined MD/PhD Program is to train medical scientists who will become leaders in medical research. To achieve this goal, a flexible program of combined medical and scientific training is provided for students of superior academic and research potential.

Research Environment

The MD/PhD Program capitalizes on the wide range of basic and clinical science training opportunities that are available on the rapidly expanding campus of the University of Maryland Baltimore. The program offers PhD degrees in many disciplines including: Anatomy, Biochemistry, Epidemiology and Preventive Medicine, Human Genetics, Microbiology and Immunology, Molecular and Cell Biology, Neuroscience, Pathology, Pharmacology and Experimental Therapeutics, Physiology and Toxicology. In addition, doctoral training is offered through interdisciplinary training programs including Neurosciences, Membrane Biology, Muscle Biology, Reproductive Endocrinology, and Toxicology – all supported by the National Institutes of Health. A unique strength of the program includes research centers that provide

outstanding research opportunities for clinical investigators, such as: Center for Vaccine Development, Cancer Center, Institute of Human Virology, Center for Fluorescence Spectroscopy, Nuclear Magnetic Resonance Facility, Environment and Human Health Research Center and the Maryland Biotechnology Institute. Thus, there is an extraordinary range of high quality research programs available to the MD/PhD students.

Program Requirements and Schedule
Requirements for the combined MD and PhD degrees are equivalent to those of the separate degrees of the Doctor of Medicine (School of Medicine) and the Doctor of Philosophy (Graduate School). The dual degree program can be completed within six-to eight-years.

Although the schedule of training can be flexible, entering students typically complete the two preclinical years as medical students prior to enrolling as full time graduate students. During this initial period the MD/PhD students normally use the pre- and post-freshman summers for research rotations in laboratories of their choice. In addition, during the first year there is an extensive orientation program which provides a detailed view of the diverse research opportunities available. The research rotations and orientation are designed to facilitate the choice of a thesis advisor.

After completion of the pre-clinical years, MD/PhD students enroll for two-to four-years in the PhD program of their choice. During this time they take required graduate courses and complete their dissertation research. Subsequently, students begin the final two years of their medical training which takes the form of a series of clinical clerkships. This program schedule is a general one. A student may complete the combined degree in a different sequence based on an alternative plan developed in consultation with the advisory committee.

Financial Support During MD/PhD Training
All students admitted into the program are awarded a waiver of tuition at the level of a Maryland resident during the medical school years. Supplemental support is available to pay out-of-state tuitions for a limited number of outstanding non-resident students. During the graduate school years stipends and tuition remission are awarded to all students through graduate programs and PhD mentors. A limited number of applicants may also qualify for supplemental funds through the Outstanding Scholars Program which provides a stipend for the medical school years as well. Students are selected for the Outstanding Scholars Program based on their record of achievement and potential for future development. For current information on stipends, contact the program director.

Application Process
The MD/PhD Program is open to all qualified applicants, regardless of state residence. Applicants to the program are required to meet the admissions requirements of the School of Medicine. Applicants complete and file an AMCAS application, choosing the University of Maryland as one of the schools to receive the application. The secondary application package includes an MD/PhD Program supplemental form which must be completed and returned with the secondary application. Criteria for admission include MCAT scores, the undergraduate/graduate academic records, letters of recommendation and, very importantly, research experience. Applicants are selected for interviews based on the above criteria.

Prospective students are interviewed for the MD/PhD Program and the School of Medicine during an initial one-day visit to the campus. Admission to the MD/PhD Program is determined by the MD/PhD Advisory Committee in consultation with the medical school admissions committee.

For further information, including details of the specific PhD programs, contact:

Terry B. Rogers, PhD
Director, MD/PhD Program
Room 1-005 Bressler Research Building
655 W. Baltimore Street
Baltimore, MD 21201
(410) 706-3990
trogers@som.umaryland.edu

Office of Student Research

The Office of Student Research (OSR) provides opportunities for students from high school through medical school to consider the possibility of graduate school, a career in the health professions and/or academic medicine and of specifically increasing the number of under-represented minority (African American, Native Americans, mainland Puerto Rican and Mexican American) students and faculty in those professions. In addition, the office coordinates outreach programs to K-12 schools. Medical students are encouraged to become involved in biomedical investigations through participation in supervised basic and clinical research projects offered by School of Medicine faculty through the Office of Student Research. The programs are supported jointly by training grants from the National Institutes of Health and National Science Foundation as well as the financial assistance of the Office of the Dean. The faculty and administration of the School of Medicine are committed to the training of physician-scientists through the OSR's programs and strives to enhance the connection between the treatment of patients and the scientific investigations that enable patient care to advance. The physician-scientist who bridges both basic and clinical sciences and clinical practice is therefore in an ideal position to translate research into clinical application and patient problems into laboratory investigation.

Research is conducted in virtually all major areas of biomedical/behavioral interest at the School of Medicine. These include, but are not limited to behavior, cardiovascular disease, endocrinology, environmental health, epidemiology, health disparities, infectious diseases, immunology, neuroscience, oncology, pharmacology, pulmonary disease, toxicology and virology. Traineeships are awarded on a competitive basis for 10-to-12 weeks of full-time participation with stipends based on current NRSA guidelines. These experiences are available to incoming medical students during the summer before their freshman year, and to medical students generally during the summer after their freshman year. On occasion, awards are made to students during the summer after their sophomore year or to seniors during the academic year. Funds are not granted to students with doctoral degrees, to those who are involved in doctoral dissertation research or who have alternative sources of research funding. However, the program may supplement some alternate sources up to the level of STRTP trainees. Applications for all programs are available at our website: http://www.medschool.umaryland.edu/osr.

Students selected to participate in the program attend an orientation that includes a short course on "*The Ethical and Responsible Conduct of Research*" and a series of research seminars and informative talks that are part of a "Colloquium on Research." Trainees also receive HIPAA (confidentiality), IRB (human research protocols) and IACUC (animal care and use) training and certification. Students also present their research to fellow students and faculty during the summer at the *Student Research Forum* and on *Medical Student Research Day* each October.

Summer research traineeships at the School of Medicine are available to under-represented minority high school and college students to encourage careers in one of the health professions and/or biomedical/behavioral and health disparities research. The programs provide students with a realistic understanding of the biomedical research environment through hands-on experience, contact with appropriate role models and application procedures for professional and graduate schools. Positions are available for 10-12 weeks during the summer months and at selected sites off-campus. Trainees work under the direct supervision of experienced scientists and receive stipends for the 10-12 week period that is based on current NRSA guidelines.

Foreign research traineeships are available to medical students and undergraduates students with prior research experience. The international sites are in Africa (Ghana and Nigeria) China, Europe (The Netherlands), Middle East (Israel), South America (Brazil and Chile) and the West Indies (Jamaica, Trinidad & Tobago). These international research opportunities are funded through grants from the Fogarty International Center at NIH.

The office works cooperatively with the Office of Faculty and Student Development, Office of Policy and Planning and medical student groups, various K-12 schools, Minority Access to Research Careers (MARC) and Minority Biomedical Research Support (MBRS) directors in Maryland and elsewhere to ensure access to research careers and involvement for all who are interested.

Applicants for all programs must be currently enrolled in high school, undergraduate school or post-baccalaureate program, graduate or medical school, be in good academic standing with a GPA of $\geq$3.0 at the time of application and must not have graduated at the time of the traineeship. Although students from any state may apply, preference is given to Maryland residents and those going to school in Maryland. For high school students and undergraduates, it is strongly recommended that applicants have successfully completed courses in biology and chemistry.

Other opportunities including volunteer research positions exist for brief or extended research experiences, either on- or off-campus during the summer or academic year. The OSR provides a list of useful links to such opportunities at its website, maintains a list of opportunities and also surveys for on- and off-campus research opportunities in both basic and clinical science areas that may be available throughout the calendar year. In some cases individual faculty members may have grant funding to support a student.

Medical Student Research Day

The Office of Student Research, in cooperation with Alpha Omega Alpha (the national medical honor society, sponsors a research competition each year in October. All medical students, except for those students in the MD/PhD Program conducting dissertation research, are encouraged to participate and attend these presentations and, are eligible to compete for $2,000 in prizes. Students present at oral or poster presentations, attend a keynote address, dinner and a ceremony during which prizes are awarded for poster and oral presentations.

For further information on these programs please contact:

Jordan E. Warnick, PhD
Assistant Dean and Professor
Office of Student Research
660 West Redwood Street, 324 HH
Baltimore, Maryland 21201
(410) 706-3026
jwarnick@som.umaryland.edu
http://www.medschool.umaryland.edu/osr

Graduate Programs

The Graduate School is the largest of the schools at the University of Maryland Baltimore (UMB), enrolling almost 1000 students. It offers the MS and PhD degrees and, in conjunction with the professional schools, the opportunity to complete joint degrees including the MD/PhD, PharmD/PhD and the DDS/PhD. Over 300 graduate students are pursuing studies in the School of Medicine graduate programs.

PhD students in the School of Medicine are generally provided financial support for the entire course of their studies. This support comes in the form of Graduate Research Assistantships (stipend, tuition remission, and health insurance), provided by the Graduate School and/or by the School of Medicine, during the initial years of study. When a student begins dissertation research, he/she is supported by the research funds of his/her mentor. In recent years research funding to all schools has increased dramatically, with major support coming from agencies such as the National Institutes of Health, the National Science Foundation, the Veteran's Administration, various agencies of the state of Maryland and the private sector.

The Graduate School at UMB is part of the University of Maryland Graduate School, Baltimore (UMGSB). The UMGSB governs the graduate programs located at UMB and the University of Maryland Baltimore County (UMBC) campuses, bearing primary responsibility for approval of new courses and programs and admission of faculty to Graduate Faculty status. An advantage of this linkage is increased access for UMB students to academic research and student life resources at UMBC.

In addition to its degree-granting programs, the Graduate School, in collaboration with the campus office of Student Services, sponsors a Writing Center. It also offers programs in the responsible conduct of research and a survival skills seminar series. The latter aims to provide professional enrichment and addresses topics such as giving good oral presentations, grant writing and mentor selection. These offerings are open to all students (and faculty) on campus.

Students also participate in the governing of the Graduate School through the Graduate Student Association (GSA), a student-run organization represented by several degree programs on campus. The GSA coordinates a variety of services and programs that address the specific professional and social needs of graduate students.

The Graduate School is also a key partner in PROMISE, Maryland's Alliance for Graduate Education and the Professoriate (AGEP), the alliance of the three public research universities in Maryland, dedicated to increasing the number and diversity of PhD graduates in the sciences and engineering who go on to academic careers. PROMISE uniquely serves the needs of graduate students across the three campuses through activities that range from retreats, seminars, and conferences, to informal discussions during breakfast. The services and programs of PROMISE are open to most graduate students who are seeking or interested in obtaining a PhD, regardless of discipline.

The following graduate programs are offered on the University of Maryland Baltimore campus:

Anatomy and Neurobiology	PhD	
Biochemistry*	MS	PhD
Biomedical Sciences – Dental School	MS	PhD
Dental Hygiene	MS	
Epidemiology	PhD	
Gerontology*	PhD	
Human Genetics	MS	PhD
Marine-Estuarine-Environmental Sciences*	MS	PhD
Medical and Research Technology	MS	
Microbiology and Immunology	PhD	
Molecular and Cell Biology*	PhD	
Neuroscience and Cognitive Science*	PhD	
Nursing	MS	PhD
Oral and Experimental Pathology	MS	PhD
Pathology	MS	PhD
Pharmaceutical Sciences	PhD	
Pharmacology and Experimental Therapeutics	MS	PhD
Pharmaceutical Health Services Research	PhD	
Physical Rehabilitation Science	PhD	
Physiology	MS	PhD
Preventive Medicine	MS	
Social Work	PhD	
Toxicology*	MS	PhD

*Interdisciplinary programs

Interdisciplinary programs, involving multiple departments on the Baltimore campus or departments on several of the campuses of the University System of Maryland, are becoming increasingly important to the Graduate School. Such programs make efficient use of resources while allowing the school to move quickly into emerging research areas of national importance.

Graduate School applications and catalogs can be obtained by contacting:

Graduate Enrollment Affairs
515 West Lombard Street, Room 208
Baltimore, MD 21201
(410) 706-7131
gradinfo@umaryland.edu

A wide variety of information on the Graduate School, including catalog and application information, can be accessed via the Graduate School web page: http://graduate.umaryland.edu.

Residencies and Fellowships

The Office of Graduate and Continuing Medical Education assists the University of Maryland Medical System in providing collaborative oversight of postgraduate residency education programs. Activities of the office include providing administrative support for the National Residency Matching Program, providing professional and staff support for oversight of ACGME-approved programs, and developing residency curricula.

Graduate medical education training for residents and fellows is offered in a variety of clinical sites. The majority of clinical training occurs at the University of Maryland Medical System, the Baltimore Veterans Affairs Medical Center and Mercy Medical Center. A network of affiliated community hospitals and ambulatory care centers with significant commitment to the importance of a teaching environment provides much of the variety and depth offered to residents and fellows.

Programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME) comprised of the following member organizations: American Board of Medical Specialties, American Hospital Association, American Medical Association, Association of American Medical Colleges and the Council of Medical Specialty Societies.

Residency positions are filled through the National Resident Matching Program. Participating in the match are the following programs: preliminary programs in medicine and surgery; categorical programs in diagnostic radiology, emergency medicine, family practice, general surgery, internal medicine, combined program in internal medicine/pediatrics, neurology, obstetrics and gynecology, orthopaedic surgery, pathology, pediatrics, combined program in pediatrics/emergency medicine and psychiatry; advanced programs in anesthesiology, diagnostic radiology and radiation oncology.

Resident and/or fellowship positions are available in the following ACGME-approved specialty and subspecialty areas and are sponsored by the University of Maryland Medical System. Programs identified with an (*) are currently approved University of Maryland Fellowship programs and are not currently overseen by the ACGME. For information on new programs or additional postgraduate training opportunities, please contact the individual departments or the ACGME directly.

Department of Anesthesiology:
- anesthesiology, critical care, pain management ,OB anesthesia*, cardiothoracic anesthesia*

Department of Dermatology:
- dermatology

Department of Diagnostic Radiology:
- diagnostic radiology, vascular and interventional radiology, neuroradiology, nuclear radiology and nuclear medicine

Department of Epidemiology and Preventive Medicine:
- preventive medicine

Department of Family Medicine:
- family practice, sports medicine

Department of Medicine:
- internal medicine, cardiolovascular disease, interventional cardiology, clinical cardiac electrophysiology, endocrinology diabetes & metabolism, gastroenterology, geriatric medicine, hematology/oncology, infectious diseases, nephrology, nephrology/renal transplant*, pulmonary disease and critical care medicine, rheumatology, combined program in internal medicine/pediatrics, combined program in internal medicine/emergency medicine, combined program in internal medicine/pediatrics

Department of Neurology:
- neurology, clinical neurophysiology, EEG/epilepsy*, movement disorders*

Department of Neurosurgery:
- neurological surgery

Department of Obstetrics, Gynecology & Reproductive Sciences:
- obstetrics and gynecology, maternal fetal medicine*

Department of Ophthalmology:
- ophthalmology, glaucoma*, retina ophthalmology*

Department of Orthopaedic Surgery
- orthopaedic surgery, trauma orthopaedics,

Department of Pathology:
- pathology, anatomic and clinical pathology, cytopathology

Department of Pediatrics:
- pediatrics, behavioral and developmental pediatrics, critical care, endocrinology, infectious diseases, neonatology-perinatology, combined programs in internal medicine/pediatrics and pediatrics/emergency medicine and pediatric medicine

Department of Psychiatry:
- psychiatry, addiction psychiatry, child and adolescent psychiatry, geriatric psychiatry, forensic psychiatry

Department of Radiation Oncology:
- radiation oncology

Department of Surgery:
- general surgery, endoscopy*, otolaryngology, thoracic and cardiovascular surgery, urology, emergency medicine, pediatric surgery, plastic and reconstructive surgery, vascular surgery, surgical critical care and combined program in pediatrics/emergency medicine, critical care/emergency medicine*, transplant*

Correspondence, applications and residency inquiries should be addressed to the chairperson of the respective department or program in care of:

University of Maryland Medical System
22 South Greene Street
Baltimore, Maryland 21201

Continuing Medical Education

The University of Maryland School of Medicine is accredited by the ACCME and provides a wide array of continuing medical education (CME) activities. These educational activities assist physicians in the maintenance and enhancement of their clinical competence in order to promote high quality health care for the citizens of Maryland and elsewhere. To assure clinical relevance, activities are designed on the basis of identified educational needs of practicing physicians.

CME offerings consist of courses (one-half to five days in length), "hands on" workshops, enduring materials (including self-study programs), and a complex array of clinical departmental and division rounds and conferences. Opportunities for interaction between attendees and presenters are part of all CME activities where possible.
The CME program is administered by the associate dean for Graduate and Continuing Medical Education and a full-time staff, with the assistance of a faculty advisory committee. For further information please contact:

Office of Graduate and Continuing Medical Education
University of Maryland School of Medicine

655 West Baltimore Street, Room 14-015
Baltimore, Maryland 21201
(410) 706-3956

Resources

Office of Medical Education (OME)
• Provides educational support for faculty and students.
• Provides multi-media systems design and hardware installation for medical school education.
• Provides faculty development through instructional techniques, design and evaluation in coordination with the Office of Faculty and Student Development.
• Provides educational resources including audiovisual aids, instructional videotapes and computer software programs.
• Develops and implements computer-based instructional systems.
• Assists in the development of special educational programs.
• Assists in curriculum development and evaluation of curricular programs.
• Provides evaluation of instructional systems and techniques.
• Provides audiovisual support services for lecture halls, small group classrooms and special events.
• Provides individual and group tutorials, mock examinations and study skills workshops.
• Provides research in medical education, instructional design, evaluative techniques and educational technology.
• Consults with faculty and staff of the medical school, as well as the other UMB schools in media production.
• Provides classroom scheduling.

A variety of services, administered by the director of Academic Development, offer a variety of opportunities for students to become more effective, efficient learners. The services include:

The Prematriculation Summer Program (PSP): Prior to the beginning of the academic year, incoming freshmen are invited to take part in a six-week simulation of the first year curriculum. Participants study significant portions of Structure & Development and Cell & Molecular Biology, and are given a brief introduction to Functional Systems; learn to handle the medical school's accelerated pace and grasp-of-material demands; gain practice in gross anatomy and histology labs, small group study, and exam-taking; and refine their study skills and habits to meet the new challenges. PSP is especially designed for students who are at greater risk of not succeeding in medical school; such applicants are given enrollment preference. Follow-up studies have consistently shown that PSP has had a positive and significant impact on the academic achievement of PSP students. Each year, the program also affords a select group of academically talented sophomores the opportunity to explore academic medicine and sharpen their own academic knowledge by teaching this class of approximately 20 students.

Supplemental Instruction: Individual and small group tutorials are available to all freshmen and sophomores as needed at no charge.

Academic Development Workshops: At various times throughout the year, formal presentations and panel discussions addressing topics of general concern and interest (e.g., time management, active learning, test-taking, and course previews) are conducted.

Academic Counseling: Individual counseling sessions, focusing on problems affecting academic performance and strategies for improvement, are available to all medical, physical therapy and medical technology students.

Academic Monitoring: First- and second-year exam results are reviewed frequently. Students who do not pass an exam or whose results are significantly lower than usual are invited in for consultation as soon as possible after the poor exam showing. The student works with the director in specifying what went wrong and in fashioning an appropriate remedy. Follow-up contacts provide additional support to the student. The Academic Monitoring Committee meets periodically to examine the academic progress of all first- and second-year students with particular attention paid to devising interventions for students experiencing difficulty.

Board Preparation: A series of activities assist sophomores in getting ready for the USMLE STEP I.
Activities include: gathering and sharing with sophomores the collective wisdom of juniors whom have just taken the boards; offering frequent formal review sessions covering "high yield" exam topics; conducting occasional information-sharing workshops and panel discussions; identifying "at risk" students who may have difficulty with STEP I for special board prep assistance; in individual consultations, structuring study strategies/schedules, answering questions and discussing areas of concern; administering a February mock board which provides students with baseline information as well as giving a "heads up" that the boards are approaching; helping those who must retake the STEP I. Board review books are available for circulation from the academic development resource library. By request, assistance also is given to those preparing for the STEP II or the specialty licensing exams.

Research: Ongoing data collection and analysis provide a source of information useful in clarifying the role and interplay of various factors involved in student learning. These qualitative and quantitative data sets are utilized by others conducting research or making curriculum decisions.

Educational Screening/Special Accommodations: Students with learning disabilities (LD) or attention deficit disorders (ADD) receive assistance in minimizing the disability's impact on their academic performance. Students suspected of being LD or ADD, but not previously identified as such, are referred for testing. If the results are positive, the student will receive assistance in gaining accommodations and adjusting his/her study approach accordingly.

Student Computer Facilities: The Office of Medical Education is responsible for the operation of a student computer facility in addition to the student laptops: the Computer Learning Center.

This facility is located on the second floor of the MSTF building and consists of 20 stations open throughout the day. The Office of Medical Education maintains the network and provides helpdesk activities dedicated to support student laptop computers and use by the students.

Photography: Services include photographic copying of flat material such as written matter, x-rays, laboratory tracings and data; photography of specimens, equipment set-ups, surgical, clinical and laboratory activities; and portraits for school-related purposes. The photography laboratory also handles slide duplication, and acts as a collection station for commercial processing of color photography. Computer-developed color slides are a major area of service.

Health Sciences and Human Services Library

"The library is always one of the first places you look to in order to measure the quality of any institution of higher education. Those who see our new library, from the outside and inside, will have no doubt as to the seriousness of our academic mission. This wonderful building puts us in a leadership position on an international scale."
—UMB President David J. Ramsay (March, 1998)

Distinguished as the first library established by a medical school in the United States, the University of Maryland continued its leadership role when the new Health Sciences and Human Services Library (HS/HSL) opened in April of 1998.

The library is the second largest medical school library on the East Coast. The library has six levels and covers 190,000 square feet, which includes the Tower Café, the HS/HSL coffee lounge. The facility offers wireless access as well as 1500 data connections for laptop users, along with 50 public-access workstations. These workstations have access to everything, from the Web to email to databases to full-text journals/textbooks to applications. The library's over 370,000 volumes and 2500 print and e-journal titles can found through HS/HSL online catalog which also provides access to the resources of 15 other libraries in the University System of Maryland. There is seating for 900 individuals in the library. This arrangement includes 130 individual study-carrels and more than 40 collaborative learning rooms always available to students.

HS/HSL digital information resources are available offsite through the web site (http://www.hshsl.umaryland.edu). Additionally, the Web page directs users to other valuable resources from around the world and is also the first place to look for additional news and information about the Health Sciences and Human Services Library.

All library services are fully supported by a staff of librarians, computing, and network support professionals. The staff is available for consultations and both online and on-site instruction, as well as assistance in planning for the integration of information skills into curricula and courses.

In addition to serving all the professional schools on campus and the University of Maryland Medical Center, the library is a nationally recognized leader in information technology

and serves as the Regional Medical Library for the Southeastern United States, Region 2 of the National Network of Libraries of Medicine.

For further information about the library and its services, access the library's Web address at http://www.hshsl.umaryland.edu.

Medical Alumni Association

The Medical Alumni Association – the oldest independent medical alumni association in the United States – has served all students, graduates, faculty and staff affiliated with the School of Medicine since 1875. Located in Davidge Hall, 522 West Lombard Street, the Medical Alumni Association office is open weekdays. Among its many activities, the association coordinates the annual Reunion weekend, publishes the quarterly Bulletin and sponsors an annual social event for each medical school class.

Since the association inaugurated the Annual Giving Drive in 1978, lectures, scholarships and student loans funded by alumni contributions have enriched the programs and goals of the School of Medicine on a daily basis.

Affiliations

Recognizing the importance of providing excellent clinical experiences with stimulating faculty and mentors, the School of Medicine has developed a comprehensive network of affiliations designed to encompass the continuum of medical care including ambulatory, acute hospital, home care, rehabilitation and chronic care. In all programs medical students are trained by and fully supervised by faculty of the School of Medicine, University of Maryland, Baltimore.

Over the past five years, a significant effort to coordinate, expand and improve the ambulatory care experience has resulted in an extensive ambulatory care network of opportunities. Clinical experiences are offered in multi-disciplinary teaching clinics, faculty practices, community clinics, private practices and hospital-based ambulatory care programs. Model geriatric clinical education programs, designed at three facilities with large cohorts of elderly patients, serve as stimulating educational experiences where computer-assisted learning augments the faculty preceptor patient experience.

Academic tertiary care experience, demonstrating state-of-the-art technology and ongoing exciting clinical research, is offered at the three major affiliates: the University of Maryland Medical Center, the Baltimore Veterans Affairs Medical Center and Mercy Medical Center. Additionally, community hospitals with major commitments to the importance of a teaching environment serve as outstanding opportunities for primary and secondary health experiences.

A successful network of community, state and federal psychiatric facilities has resulted in a widely acclaimed statewide program for psychiatry training. Special clinical research

experience in psychiatry is additionally offered at the Institute of Psychiatry and Human Behavior and at the Perry Point Veterans Affairs Medical Center.

Experience in rehabilitation, home care and chronic medical care is offered through several facilities, each offering special aspects of expertise for those who wish to pursue psychiatry, neuro-rehabilitation and geriatrics. The following sites have formal affiliations with the School of Medicine: Baltimore Veterans Affairs Medical Center, Walter P. Carter Center, Children's National Medical Center (Washington), Franklin Square Hospital, Greater Baltimore Medical Center, Harbor Hospital Center, Johns Hopkins Hospital, Kernan Hospital, Johns Hopkins Bayview Medical Center, Maryland General Hospital, Mercy Medical Center, National Orthopedic Hospital, St. Agnes Hospital, Sinai Hospital of Baltimore, Sheppard and Enoch Pratt Hospital, Springfield Hospital Center, Spring Grove Hospital Center, Union Memorial Hospital, University of Maryland Medical Center (includes R Adams Cowley Shock Trauma Center and Greenebaum Cancer Center), University Specialty Hospital, Western Maryland Area Health Education Center (AHEC) and York Hospital (PA).

The University of Maryland Medical Center (UMMC)

Located in downtown Baltimore, the University of Maryland Medical Center is a major, non-profit teaching hospital that provides a complete range of inpatient and outpatient services to more than 300,000 adults and children each year. UMMC is a national and regional referral center for trauma, cancer, neurocare, cardiac care, women's health services, children's health services and organ transplants. It has one of the largest kidney transplant programs in the world.

The medical center has 5,400 employees, 650 licensed beds, 30,000 inpatient admissions each year and about annual 1,400 births. The senior medical staff - more than 800 physicians - is comprised of the clinical faculty of the School of Medicine who supervise training of the more than 600 graduate-physician house staff as well as the medical students.

The University of Maryland Medical Center includes University Hospital, the University of Maryland Greenebaum Cancer Center, the R Adams Cowley Shock Trauma Center and the University of Maryland Hospital for Children. It is the primary clinical setting for the University of Maryland School of Medicine. It is dedicated to providing exemplary health care for the people of Maryland, to preparing students and physicians-in-training for the practice of medicine and the allied health professions and to carrying out significant research to improve the quality of health care.

Since its founding in 1823, the medical center has become a major tertiary care center that offers a full range of specialized medical and surgical services. It has state-of the-art technology in all areas, including a new surgical facility. The medical center's "OR of the Future" occupies 52,000 square feet and combines the most advanced video technology with computerized equipment in order to enhance patient safety and operational efficiency. More than 15,800 surgeries are performed at the Medical Center each year. The surgical facility is located in the newly constructed, 380,000-square-foot Harry and Jeanette Weinberg Building that also houses new, state-of-the-art adult and pediatric emergency departments, a new diagnostic imaging facility, an expansive new cafeteria and food court, a patient resource center,

and an employee learning center. As the building's upper floors are finished, it will incorporate several new state-of-the-art intensive care units as well.

Because of its combined professional and academic environment, many outstanding treatment programs and research facilities have been developed at the medical center. The R Adams Cowley Shock Trauma Center and the University of Maryland Greenebaum Cancer Center are two prime examples.

The R Adams Cowley Shock Trauma Center, linked with the statewide network of emergency communications, transportation and medical care facilities, is second to none. It provides high-speed emergency service to more than 7,000 critically injured persons each year - the most severe multiple trauma cases in the state - with an impressive 96 percent survival rate. A heliport on the roof of the R Adams Cowley Shock Trauma Center facilitates rapid care of the most severely injured and acutely ill patients from throughout the state.

At the University of Maryland Greenebaum Cancer Center, collaboration between research scientists and research clinicians has resulted in notable advances in treating the full spectrum of solid tumors and blood-related cancers. It was at the cancer center that researchers pioneered the freezing of a leukemia patient's own platelets for later use during relapses. The center's physicians work closely with Radiation Oncology, Surgical Oncology and related programs within the hospital, tailoring and coordinating the treatments for each patient's optimal care. The cancer center is nationally known for its blood and marrow transplant program and its research into new drug development.

Other centers of excellence include:

- University of Maryland Hospital for Children, which provides the full range of pediatric services. It houses the state's largest neonatal intensive care unit.

- The solid organ transplant program, which performs kidney, pancreas, simultaneous kidney-pancreas, liver, heart and lung transplants, as well as islet cell transplants. The comprehensive program continually surpasses national survival rates in every area.

- The Maryland Brain Attack Center, where physicians from Neurology, in partnership with Emergency Medicine and Diagnostic Radiology, provide patients new treatments that help prevent disabilities from stroke by rapidly restoring blood flow to save brain tissue.

- The Gamma Knife Center, which allows patients with inoperable brain tumors and vascular malformations to have a non-surgical treatment option. It represents collaboration among specialists in Radiation Oncology and Neurosurgery and was the first Gamma Knife Center in the Mid-Atlantic Region.

- University Sports Medicine, which provides injury prevention and treatment services to everyone from college athletes, such as the University of Maryland Terrapins, to weekend warriors. It is an example of the excellent programs in Orthopaedics, which include the full range of care from joint replacements to spine surgery.

- An affiliation with the Institute of Human Virology, where world renowned experts led by Dr. Robert Gallo investigate the cures and prevention of chronic viral diseases, with AIDS as a top priority.

Through partnerships with the University of Maryland's professional schools, the University of Maryland Medical Center is the training site for pharmacists, social workers, dentists, nurses and other health professionals and technicians. This multi-dimensional professional environment is a unique and valued characteristic of the University of Maryland Medical Center.

Along with the School of Medicine, the University of Maryland Medical Center has met the needs of the rapidly changing local and regional health care market with expanded services. These services include:

- Three primary care sites in West Baltimore.

- Specialty care in the suburbs in Harford and Anne Arundel Counties and primary and specialty care at Shipley's Choice in Anne Arundel County.

The University of Maryland Medical Center is part of the six-hospital, private, non-profit University of Maryland Medical System. The other hospitals in the medical system are:

North Arundel Hospital, a 282-bed acute care hospital located between Baltimore and Annapolis in Anne Arundel County. This suburban community hospital is located approximately five miles south of Baltimore, Maryland, and 25 miles northeast of Washington, D.C. The facility offers a wide variety of services and has numerous areas of specialization including orthopedics, cardiology, geriatrics and oncology.

Maryland General Hospital is a 242-bed community teaching institution located just northwest of downtown Baltimore that provides a full spectrum of care for more than 110,000 patients annually.

Kernan Hospital, with 123 beds, is Maryland's largest rehabilitation and orthopaedic hospital for both adults and children. Kernan Hospital includes the William Donald Schaefer Rehabilitation Center, with dedicated rehabilitation units for stroke, spinal cord and head injuries, and complex orthopaedic problems. Kernan is located in the Woodlawn area of Baltimore.

University Specialty Hospital, a 180-bed chronic care facility located in downtown Baltimore, focuses on the complex needs of chronically ill patients. It has the region's largest pulmonary ventilator program and Maryland's only coma emergence program.

Mt. Washington Pediatric Hospital, a 102–bed pediatric and rehabilitation hospital located in northwest Baltimore, provides specialty medical care to infants and children with complex medical needs.

VA Maryland Health Care System (VAMHCS)

The VA Maryland Health Care System (VAMHCS) consists of two Maryland VA Medical Centers, located at Baltimore and Perry Point, and an independent 120-bed Rehabilitation and Extended Care Center on the Loch Raven campus located in Baltimore City. The VAMHCS also has five Community Based Outpatient Clinics (CBOCs): Fort Howard, serving Southeast Baltimore County; Cambridge, serving the Maryland Eastern Shore counties; Glen Burnie, serving Baltimore and Anne Arundel Counties; Loch Raven campus, serving North Baltimore County; and Pocomoke, serving the extreme southern tip of Maryland. Also, an Outpatient Mental Health Clinic is operational at the Maryland Homeless Veterans, Inc., in Baltimore City.

The VAMHCS contains a fully computerized patient information system and a highly advanced electronic medical record. Terminals in all inpatient team rooms and outpatient exam rooms allow for ease of patient care and reduced non-productive time for students. The information system allows instantaneous clinical queries for clinical research and continuous improvement in patient care. Major increases in support staff assigned to house staff teams has resulted in decreased monotonous work for students and residents as support staff is more frequently available for routine phlebotomy, intravenous line adjustments, escort services and clerical support services. A major reconfiguration of nursing and support staff combined with computer designed programs has increased the efficiency of the medical care so that students, house staff and faculty can better spend their time on direct rather than indirect patient care, and on stimulating educational and clinical research areas rather than on cumbersome support delivery problems. The Bar Coded Medication Administration system is a state of the art example of the VAMHCS focus on patient safety and quality care. This system, along with the Physician Computer Order Entry feature of the computerized medical record serves as a national model in the area of patient safety with respect to decreasing medication errors.

In the disciplines of medicine, surgery, psychiatry, neurology, anesthesiology, pathology, radiology, rehabilitation medicine, geriatrics and ambulatory care, there is close integration of the faculty, resident and undergraduate levels of the School of Medicine. More than 70 investigators have funded research programs in areas including infectious disease, geriatrics, exercise physiology, cardiology, immunology, neurology, oncology and schizophrenia. For the past five years, the VAMHCS has been among the top ten facilities in research funding in the nation.

Area Health Education Center Program (AHEC)

One of the University of Maryland Baltimore's commitments to improving health care delivery in primary care is the Area Health Education Center (AHEC) program.

The AHEC program has been developed to provide comprehensive health care education and training for undergraduate and graduate medical students, as well as for students from the other UMB health profession schools. AHECs attract students, interns and residents to rural and underserved areas, fostering their interest in practicing in such sites. AHEC activities promote increased numbers of physicians and other health care professionals, encourage the development of health care facilities, provide multi-disciplinary and interdisciplinary training for health

professionals, and increase capabilities for the existing program of graduate and continuing medical education and health training.

The University of Maryland School of Medicine has directed the Maryland AHEC Program for almost 30 years. The Maryland AHEC system is comprised of two rural centers and one urban center: the Western Maryland AHEC, the Eastern Shore AHEC and the Baltimore City AHEC, respectively. The Western Maryland AHEC, established in 1976, is located in Cumberland, a rural community in Allegany County. The Eastern Shore AHEC, domiciled in Cambridge at the Eastern Shore Hospital Center, has been in operation since 1995. Both centers afford students the opportunity to understand and experience the valuable and rewarding benefits of delivering primary health care in a rural environment. The Baltimore City AHEC became operational in Spring 2003. Its central theme is to raise the health consciousness of the surrounding urban community by promoting good health and disease prevention and by helping to make primary healthcare services more accessible for those in need.

Medical school policy requires that students spend eight weeks of their senior year in clinical education at an ambulatory site. Students are encouraged to spend this mandatory rotation at rural and urban sites. Additionally, senior medical students may choose a rotation at one of the three AHEC sites as a primary care elective. These experiences are designed to encourage students to consider practice in similar settings and to gain a firm appreciation of the special health needs of rural and urban populations.

Student Life

Office of Student Affairs
The Office of Student Affairs is designed to provide guidance, advice, help and administrative services to students enrolled in the School of Medicine. In addition, the office is responsible for monitoring student registration, progress and advancement, graduation and all aspects of student life related to undergraduate medical education. To this end the office employs one full-time associate dean, two part-time assistant deans and support staff.

While the entire staff is available to offer assistance to all students, some staff members also assume a specialty area within their overall functions. These specialty areas include senior elective advising, student fellowships, career and residency advising, and counseling.

Electives
There is no elective requirement during the pre-clinical years, although many faculty members offer elective experiences. Offerings may include such diverse topics as cardiovascular pathology, medical rehabilitation, nutrition, alcohol and drug abuse and many research projects. Some experiences may have prerequisites and may be open only to sophomores.

Residency Planning
The Office of Student Affairs maintains a residency advisement program that includes counseling, referral to faculty, alumni and community resources and workshops on residency selection provided during the junior year. Recent graduates are surveyed periodically so that

feedback from a number of residency programs of interest to graduates is kept as current as possible.

We have recently initiated the Careers in Medicine program. This program, developed by the Association of American Medical Colleges, helps students select careers in medicine, using a developmental approach. In the first year, the program, available on the Internet, administers questionnaires that allow a student to find areas of strength and interest. In the second year, students are encouraged to "try on different hats," by participating in various specialty interest groups. In the third year, students are given more specific information about specialties and may participate in workshops that focus on strategies for considering various clinical specialties. In the fourth year, the program is integrated with other activities in the school to help students solidify career choices.

White Coat Ceremony

The white coat is a traditional symbol of the medical clinician and scientist. It has come to represent the knowledge, skill, and integrity of the medical professional and the highest standards of professional work, whether in the classroom, laboratory or clinic. Held in November or December, the White Coat Ceremony officially welcomes freshmen students into the professional community. In mid-fall students are asked to provide a list of two or three people whom they would like to invite to this ceremony, generally parents or partners.

Following a continental breakfast, those attending hear a number of short presentations, with each speaker addressing the issue of professionalism in medicine from his or her own perspective. Speakers include representatives of the medical school administration, the pre-clinical and clinical faculty and the student body. Freshmen students are then called individually to the stage to receive their white coats from members of the faculty, as well as a copy of the school's Code of Professional Conduct. Acceptance of the white coat is an affirmation that, along with acquiring the requisite knowledge, the student will accept responsibility for developing and maintaining professional attitudes and behaviors in work and in relationships with classmates, teachers, patients and the community-at-large.

The Office of Student and Faculty Development

The Office of Student and Faculty Development provides vision and leadership in addressing faculty and student development while creating opportunities for them to reach their fullest academic and personal potential.

Responsibilities of this office are to:

- Work collaboratively with other offices in the presentation of a comprehensive faculty development program, including topics in professional development, teaching skills and research skills for campus and community-based faculty.
- Provide leadership in the school's effort to represent and collaborate with others in our diverse, multi-cultural scientific community through recruitment efforts and skill development for students and faculty.
- Coordinate a mentoring program for students in which regular meaningful contact between students and faculty works to guide and promote their career to its greatest potential.

• Promote appreciation of life-long adult learning among students, residents, and faculty.
• Advertise award, scholarship and fellowship opportunities for students and faculty, and assist in the processing of materials for these opportunities.

The Office of Student and Faculty Development coordinates programs for high school and college students that are designed to increase the number of students entering the medical profession. The office works closely with the director of recruitment in the Office of Admissions to recruit a diverse group of talented students to the School of Medicine, the Office of Academic Development to retain these students and the Office of Student Research to offer them opportunities in research projects.

For additional information contact:

Donna Parker, MD
Associate Dean for Student and Faculty Development
University of Maryland School of Medicine
655 West Baltimore Street—Room M-006
Baltimore, Maryland 21201
(410) 706-7689

Student Government
The Student Council is the organization recognized by the medical school administration as the official representative body of the registered students at the School of Medicine. Council duties include disbursing student activities funds according to the needs of its members and coordinating student input in institutional administrative policy decisions. Student Council officers serve as student representatives to national meetings of organizations that guide national educational and medical policies. The council also conducts elections of all class officers.

Student Organizations

Alpha Omega Alpha (AOA). Election to AOA, the national medical honor society, is based on scholastic achievement, service to the school, qualities of leadership, integrity and fairness to colleagues. Students are elected at the end of their junior year or the beginning of their senior year.

Members coordinate programs and lectures with the goal of furthering academic interest and stimulating curiosity. Programs of recent years have included a lecture series on topics in the history of medicine, an EKG interpretation course, sponsorship of a Clinical Visiting Professorship, campus tours for prospective medical students, and Junior/Senior Night, an orientation to the match process for junior medical students.

American Medical Association—Medical Student Section (AMA-MSS). The AMA-MSS is the medical student section of the American Medical Association (AMA) that provides leadership positions at the local and national levels, the opportunity for involvement in the medical political process and medically oriented programs for students and the community. At the University of Maryland, the AMA-NSS sponsors several events such as an annual used book sale in August and a morning donut and bagel sale. Members of the AMA-MSS receive the

Journal of American Medical Association (JAMA), American Medical News, AMA Member Matters and Pulse, a national medical student newsletter.

Each year the AMA-MSS at the University of Maryland elects and sends a delegate and alternate delegate to two meetings: the Annual AMA Meeting in June, and the Interim AMA meeting in December. Traditionally, the delegate is a second-year student while the alternate is a first-year student.

American Medical Student Association (AMSA). The University of Maryland Chapter of the American Medical Student Association (AMSA) offers the opportunity to become actively involved with a group of dynamic, concerned medical students at the local and national levels. The immediate benefit of membership is working and socializing with peers in friendly, informal settings through participation in a wide variety of activities of interests to the membership.

AMSA is involved in many service activities: microscope and used book sales, coordination of the noontime films and lectures, the student phone and housing directories, orientation activities, workshops, projects and parties. Other activities include local and national legislative monitoring and lobbying, clinic staffing, public education efforts and events coordinated with other school organizations. Fundraising projects help to defray expenses of members attending workshops and regional and national meetings. In addition, AMSA is willing to sponsor activities that are proposed by its members.

On the national level, AMSA promotes the interests of public health, and the medical students serve as a forum and information clearing house for issues of major importance; e.g., AMSA's position on the current administration's proposals as they relate to health care reform and medical education. Benefits to AMSA members include a four-year subscription to the student journal The New Physician, special interest task force newsletters, informational booklets, discounts on medical texts, life insurance policies, the AMSA Mastercard, the "HEAL Deal" for repayment of HEAL loans at lower interest rates, a low-interest loan program with increasing monies available each successive year of school, and unique educational experiences both at home and abroad—all for a single membership fee for all four years of school. The Annual National Convention is open to members (partially subsidized by chapter funds) and is a rare and valuable experience. It features four days of guest speakers, a multitude of exciting health care presentations and workshops, opportunities to share in national policy formulation, a chance to meet other medical students and socializing opportunities.

American Medical Women's Association (AMWA) Student Branch. The AMWA Student Branch at the University of Maryland is a dynamic group responsive to the needs of female medical students. While its first commitment remains to provide support and promote friendship among students, faculty, and physicians, AMWA also provides a network where students can meet and discuss issues such as lifestyles in medicine, career choices, women's health, and political issues important to women and the student body at large.

AMWA is involved in a variety of activities on campus including pot-luck dinners where special guest speakers address issues, monthly noon-time business meetings and get-acquainted gatherings with students and faculty. Although AMWA is primarily concerned with issues related to women, all AMWA functions are open to the entire student body.

Asian Professional Students Association. The Asian Professional Students Association (APSA) was formed by a group of medical students in 1984, and since then has grown to include members of other schools at UMB. APSA is open to all students, teaching staff and employees regardless of race, cultural background, sex and country of origin. The goals of the association are to encourage dialogue among fellow students of different cultural backgrounds, and to provide a platform for those who appreciate Asian culture. APSA also sponsors educational and social activities for its members and friends.

The Better Half. The Better Half is a support group open to all medical students and their significant others who are interested—husbands, wives, boyfriends, girlfriends. The group's goal is both social and supportive. Maintaining a relationship while in medical school can be difficult and knowing other people in the same situation can be helpful to both medical students and their partners. Gatherings such as the pot-luck dinners, wine tasting, wine and cheese and pizza parties are popular affairs. A partner is not needed to attend functions.

Big Sib Program. Each year an upperclassman (usually a sophomore) "adopts" an entering freshman as his/her little sib. Newly admitted students receive correspondence from their fellow big brothers/sisters during the summer prior to their entry. The program is sponsored by students with support of the admissions committee, and is designed to allow entering students to address their questions and concerns to fellow students who have already experienced life as a medical student. Moral support from big sibs often makes the transition easier for incoming students.

Bioethics Club. The Bioethics Club is a relatively new addition, formed to explore ethical issues faced by students and physicians in the medical world. The group is led by Dr. Henry J. Silverman, editor of the University of Maryland Medical System's publication Health Care Ethics, and member of the hospital's Ethics Review Committee. At bimonthly meetings, actual cases are reviewed and active discussion concerning moral and ethical issues related to particular situations or to new legislative rulings across the country is encouraged. Students also have the opportunity to attend meetings between patients, their families, physicians and members from the review committee and observe the often difficult process of making decisions concerning what course of intervention and care is appropriate for each patient. Students, faculty and administrators are all encouraged to attend.

Christian Medical Society. The Christian Medical Society (CMS) at UMB is a local chapter of a national organization which meets weekly for fellowship, prayer and discussion. CMS is committed to providing Christian fellowship and support for medical professionals, encouraging Christians to mature in their faith, challenging them to integrate their medical careers into their lives in Christ and providing an environment in which non-Christians can explore the claims of Christ. CMS presents meetings on Bible study, short-term missions, ethics, Christian family life within the medical profession and evangelism. Dinner is shared every third week. In addition,

CMS volunteers help staff the Baltimore Rescue Mission which provides medical care to the homeless. Members also have the opportunity to participate in local, regional and national conferences. All students, faculty and hospital personnel are welcome.

Complementary Medicine Club. The Complementary Medicine Club strives to introduce students and faculty alike to various types of therapy which complement traditional western medicine. Among these complementary medicines are acupuncture, herbal medicine and music therapy. The Complementary Medicine Club meets about once every month for an hour-long talk and lunch.

Emergency Medicine Interest Group. The Emergency Medicine Interest Group (EMIG) is a student organization whose mission is to expose students to emergency medicine as a career and give students an opportunity to learn skills commonly used in emergency situations. To this end, EMIG sponsors blood drawing, i.v. and suture labs, ambulance ride-alongs and emergency room observation time. EMIG also sponsors talks and luncheons with emergency medicine residents and faculty on topics such as applying for emergency medicine residency and the history of emergency medicine. EMIG members are actively involved in research in the emergency department and have attended emergency medicine physicians' national conferences.

Family Medicine Interest Group. The Family Medicine Interest Group (FMIG) is sponsored by the Maryland Academy of Family Physicians and the Department of Family Medicine. Membership fees for first-year members are paid by the Maryland Academy and members receive monthly professional journals free of charge. FMIG sponsors events and lectures relevant to family medicine throughout the year. FMIG also encourages student leadership at the state and national levels.

Gertrude Stein Medical Society. The Gertrude Stein Medical Society is a group of medical students whose goal is to foster support among gay, lesbian and bisexual students and to encourage interaction and education among all students at the University. The group seeks to help other students and faculty understand the special needs of the gay and lesbian community through education and community service. The group meets bimonthly with potluck dinners and other social events. Some members also volunteer at the Chase-Brexton Clinic. The group is open to all students and confidentiality is assured.

Humanism Honor Society. The Humanism Honor Society at the University of Maryland was established in October 2002 to provide a means of recognizing medical students, house officers and faculty members demonstrating meritorious humanistic qualities. Approximately 10 percent of the 4th year class are elected to membership each year. These student members of the society are chosen through a process of nomination by peers and faculty members and peer-evaluations by those nominated. Six residents and one faculty member are selected each year by those members of the society who at that time are associated with the medical center. Members also include those residents selected to membership in societies in other schools of medicine and a core group of humanistic faculty selected by the dean.

Internal Medicine Interest Group. The Internal Medicine Interest Group is a student run organization that focuses on community outreach and student education. The IMIG, under the guidance of a faculty advisor, holds informational meetings on key health issues such as diabetes, hypertension, cardiovascular diseases, kidney disease and immunizations. Member of the IMIG then have an opportunity to work with physicians or community organizations in these fields to assist in providing health care to target populations. In the past, the IMIG has measured blood pressure in the community and helped underprivileged Baltimore residents find health care.

Jewish Medical Students Organization. The Jewish Medical Student Association encourages all medical students, regardless of specific affiliation (i.e., orthodox, conservative, reform or non-Jewish) to join and participate in the group's activities. The association works closely with the Jewish Community Center's Office for Graduate Studies which provides sponsorship for many of its activities, including Friday night dinners, talks on Jewish medical ethics and the building of a sukkah. The association also works with other schools on campus and in the Baltimore area to plan joint activities.

Maryland State Medical Student Association. The Maryland State Medical Student Association (MSMSA) is a component of the Medical and Chirurgical Society (Med-Chi) of the State of Maryland, which is a state component of the American Medical Association. The MSMSA is involved in issues of health care, medical education and peer review, especially in the state of Maryland. MSMSA and AMA memberships are usually solicited together, and membership benefits include subscriptions to the Maryland Medical Journal, and the AMA News. The MSMSA provides active student representation in Med-Chi and the AMA. Also, there are several leadership opportunities for students in the AMA through MSMSA.

Medical BreakAway. Medical BreakAway is a nonprofit organization established by medical students at the University of Maryland. The organization provides opportunities for medical students of all years to volunteer in international medical clinics in need during spring and summer breaks. The program emphasizes both medically oriented volunteer work and socially related community service projects.

Medical Students for Choice. The University of Maryland's Medical Students for Choice (MSFC) Chapter is part of a broad organization of medical students at schools throughout the nation. The organization was founded by students who were concerned about the lack of abortion education in medical schools and residencies, the severe shortage of abortion providers, and escalating violence against providers. The University of Maryland Chapter hosts educational events, creates partnerships with other medical student groups and local pro-choice organizations, and works to incorporate abortion issues into the medical school curriculum.

Military Medicine Interest Group. The Military Medicine Interest Group is a student organization dedicated to allowing medical school students involved in the military the chance to network with one another at the University of Maryland. The group will also serve to introduce interested students to the important and dynamic role of medicine in the military. Our hope is to provide a valuable pool of information that will help guide Maryland students on military

scholarships through their military and medical careers, while also fostering an interest in and respect for the military by non-service members.

Muslim Students and Scholars Association. The Muslim Students and Scholars Association (MSSA) is an umbrella organization supported by the University Student Graduate Association (USGA) with the intentions of: (1) Meeting the needs of the Muslim community on campus, (2) Promoting brotherhood and sisterhood among Muslims and Non-Muslims, (3) Conducting social, cultural, and religious events to bring about awareness of Islam and to dispel misconceptions of Islam on campus. Friday prayers are held regularly at the Veteran Affairs Chapel at 1:15 p.m. For more information on ongoing events on campus and in the Baltimore area, please refer to the MSSA webpage at http://www.umb-mssa.com.

Organization of Student Representatives. The Association of American Medical Colleges (AAMC) was founded over 100 years ago to improve the quality of American medical education. It now includes membership of 125 medical schools, 85 academic societies such as the American College of Physicians, and 435 teaching hospitals. It maintains numerous data sources available to its members and works cooperatively with other medical organizations such as the American Medical Association, and provides information and testimony to the U.S. Congress and other federal agencies concerning medical and health-related issues.

The Organization of Student Representatives (OSR), the AAMC's student voice, is composed of one student representative from each medical school choosing to participate. OSR members gather at an annual meeting each autumn to discuss matters of concern to the nation's medical students and to elect an administrative board. The twelve-member administrative board meets quarterly with the boards of other AAMC councils to formulate AAMC programs and policies reflecting student views. OSR business is also conducted at regional spring meetings. The OSR delegate operates to channel information from the AAMC to the medical student body-at-large and vice versa on issues of medical education such as the match, changes in medical curriculum and student indebtedness. Thus, the OSR serves as an effective liaison between the nation's students and medical policy-makers to ensure consideration of student views.

Pediatrics Interest Group. This group helps students learn about careers in pediatrics. It is student run with faculty input. Opportunities for volunteerism and mentoring are encouraged.

Otitis Musica. Otitis Musica: Chamber Music -- Do you sing or play a string, woodwind, or brass instrument? All skill levels are welcome. We rehearse sporadically for informal concerts. Dr. David Pumplin dpumplin@umaryland.edu is a multi-talented musician and the group's faculty advisor.

Pediatric Education Designed by Students. Pediatric Education Designed by Students or P.E.D.S. is a group geared to medical students interested in pursuing a career in pediatrics. The group will offer various speakers to highlight the different aspect of pediatrics and introduce the students to leaders in the field whom they might contact. In addition, P.E.D.S. aims to start a mentoring program with interested pediatricians both at UMMS and in the community for students who would like to further their interests in the field. Volunteer opportunities will also be offered to promote child wellness and enrich the student's pediatric education.

Pediatric Pals. Pediatric Pals is a community service organization created by medical students for medical students. It provides a convenient, flexible and fun community service organization. Pals visit children who are in the pediatrics ward at the University of Maryland Medical System either on a weekly basis (1-4 hrs/wk) and/or during monthly parties on Saturday/Sunday afternoons. Pals play Nintendo, read books, sing, rock babies or just "hang out" and be a friend to scared, sad or lonely children. After a brief orientation, a Pal can choose as much or as little a time commitment as desired.

Project H.O.P.E.: Helping Others Through Palliative Efforts. Project H.O.P.E. is an organization concerned with the needs of critically and terminally ill individuals of all ages. As a medical student, the ability to bring physical comfort to patients in the form of medications and therapies is obviously limited, yet the capacity to bring social and emotional comfort to them is limitless. Through potluck dinners, instructional workshops, medical rounds, and other activities, the members of Project H.O.P.E. reach out to the residents of the American Cancer Society Hope Lodge, to the children and families of the Baltimore Ronald McDonald House, and to the patients of palliative care clinics and hospice programs in the Baltimore area. Project H.O.P.E. also promotes awareness of various end-of-life issues through noontime speakers and luncheons.

Sports Medicine Interest Group. This group helps students learn about careers in sports medicine. It is student run with faculty input. Students interact with faculty who practice sports medicine-orthopaedics, family medicine, internal medicine, pediatrics and emergency medicine are represented. Students will have opportunities to shadow physician and physical therapists involved in this field.

Student Interest Group in Neurology (SIGN). SIGN educates students on the field of clinical neurology as well as other clinical neurosciences. Activities throughout the year include speakers (clinical neurologists, residency directors, and other clinical specialists), neurology workshops, clinical neuroscience lectures, and a mentoring program for students.

Student National Medical Association (SNMA). The University of Maryland Chapter of the Student National Medical Association (SNMA) is an organization of under-represented minority medical students that seeks primarily to provide academic and social support for minority medical students at the University of Maryland School of Medicine. The SNMA organizes study groups, provides valuable course information and review material, and facilitates organized discussions on course requirements and strategies between upperclassmen and entering students. The SNMA also seeks to involve itself in health and educational activities which benefit the surrounding community and its youth. In past years the SNMA has been involved in tutoring local high school students, presentations to inform high school and college students of medical school opportunities and health screening programs in the community. In addition, the SNMA has also sponsored activities for Black History Month which have included seminars and films. SNMA is active in programs that promote greater interaction among minority students, physicians, faculty and alumni.

Substance Abuse Outreach. The Substance Abuse Outreach program is a joint Maryland - Hopkins program started under the Open Society Institute as a summer program. The program is intended to give 1st and 2nd year medical students a chance to work with persons suffering with substance abuse problems in a community setting. Currently, 20 students are working at Mattie B. Uzzle Outreach Center in East Baltimore doing substance abuse referral and assessments and weekly talks on various health topics ranging from HIV/AIDS to Depression and Mental Illness. The program will also sponsor guest speakers on various topics relating to substance abuse both in Baltimore and nationwide.

Surgical Lifestyles in Continuing Education. Surgical Lifestyles in Continuing Education (SLICE) provides students with an understanding of the professional activities members of the major, recognized surgical specialties. Members learn about the timing, structure and core competencies of residency training programs in the various surgical specialties. Cultural and lifestyle issues related to all realms of post-graduate career choices are discussed including surgical vs. nonsurgical, resident vs. attending, research vs. clinical, academic vs. private practice, urban vs. rural, etc. Members discuss sociopolitical issues facing surgical specialists today and the role of professional organizations in their address. The organization also provides members access to individual clinical experiences with surgical specialists in the field of their choice.

Wilderness Medical Society. The Wilderness Medical Society aims to introduce medical students to the issues and medical techniques specific (but not limited to) activities in the outdoors. Our scope of interest ranges from the provision of basic first aid for trauma situations to exploring the intricacies of exposure illness. We also promote the idea that such techniques engage common sense and personal improvisation in the face of unexpected emergency, whether one rock climbs or drives on the freeway.

Publications

Academic Handbook. The Academic Handbook is the "official word" on medical school policy and life, written by those who run the various programs described—administrators, faculty, students. Although the book is prepared through the Office of Student Affairs, student participation and feedback contribute significantly to its effectiveness.

The Plotnick Guide. The Plotnick Guide, a student-devised handbook, is given to students prior to the Junior Year to help ease the transition from "the classroom to the patient's room." This guide was conceptualized and written by Subha Airan following her Junior year with input from students and faculty. A wide variety of practical information about the hospital and "clinical pearls" are included in this useful handbook.

Student Answer Book. Published by the UMB campus, this book describes campus-wide services such as housing, student health, libraries, the bookstore, and athletic facilities, as well as policies in such areas as sexual harassment, smoking, alcohol and drug use, and violence.

The Yearbook (Terra Mariae Medicus). Since 1896 Terra Mariae Medicus has provided wide coverage of student life. It is a collection of moments and memories from the four years of medical school put together by the members of each senior class. Each senior receives a yearbook, the cost of which is included in the student activities fee.

Institutional Governance and Planning
The Committee System. Several committees are actively involved in shaping the School of Medicine, particularly the curriculum and other essential aspects of medical education. Students have a voice on these committees. The following committees/councils include students in their memberships.

Curriculum Coordinating Committee (CCC) and Subcommittees. The task of the Curriculum Coordinating Committee is to continually study and evaluate the curriculum and methods of instruction, to make recommendations concerning changes and innovations in the curriculum and instructional procedures, to make a continuing study of the student achievement evaluation process and to recommend changes when necessary. In addition, the CCC Subcommittees, i.e., Year I/Year II Committee and the Clinical Years Committee (CYC), each include student representatives elected by their classmates.

School of Medicine Council. Through the School of Medicine Council, representatives of the faculty, students, house staff, alumni and affiliated institutions and School of Medicine administration participate in the development of school policies. In addition, council members hear status reports from committees appointed by the dean. These include the reports of the Curriculum Committee, the Annual Admissions Report and those of the various search committees. The Council meets monthly during the academic year, offering students an excellent opportunity to develop an understanding of the issues affecting the operation and goals of the medical school. There are approximately 80 voting Council members, 11 of whom are students.

Judicial Board. Acceptable behavior within the academic community, including proper behavior on examinations, falls within the purview of the judicial review system and its functioning body, the Judicial Board. The system and operation of the board are defined in the "Statement of Ethical Principles, Judicial Review System and By-Laws of the Judicial Board," which is printed in its entirety in the Academic Handbook and distributed to incoming freshmen at orientation.

The board consists of a chairperson appointed by the dean and representatives of the faculty and students in the medical school community. Any member of the community who directly witnesses an act that he or she deems unethical should report the incident in a signed letter to the chairman of the Judicial Board. The board will then investigate the issue and hold hearings, as defined in the aforementioned document. Findings of the board and its recommendations with respect to the accused are forwarded to the dean. Three student representatives, one each from the sophomore, junior and senior classes, are appointed by their class presidents.

Ethical Advisory Committee (University of Maryland Medical Center). This state-mandated committee is composed of about 25 physicians, nurses, social workers, administrators, clergy, attorneys and other personnel, and welcomes the input of students and residents as nonvoting participants. The committee advises hospital staff and families on requests regarding difficult ethical decisions such as life support for terminal patients, and also helps develop hospital policy

regarding such critical situations. The committee also serves an educational function to hospital staff and reviews legal and legislative decisions.

Special Task Forces. On occasion, special committees and task forces are established to examine school policies or curriculum issues. Where these issues have direct relevance to students, the classes are frequently invited to send representatives to these functions. Major changes in policy or curriculum typically take two or more years to plan and implement, and this can be frustrating to students who will be members of each class for only one year. At the same time, however, each group of entering students reaps the benefits of changes to which their predecessors have contributed and they now have the opportunity to leave a similar legacy to their successors.

Student Health Services

The Campus Health Office, located in University Family Medicine Associates (UFMA) offices at 29 South Paca Street, is open Monday–Friday from 8:00 a.m–4:30 p.m. Students are seen for medical appointments by physicians, residents or a nurse practitioner at UFMA at the following times: Monday-Thursday from 8:30 am–7:00 pm, Fridays from 8:30 a.m.–4:30 p.m. and Saturdays from 9:00 a.m.–noon. After-hour coverage for emergencies is provided by the physician on-call at University Family Medicine.

The cost of most care provided at student and employee health is paid for through the student health fee. Gynecological services, including health maintenance (PAP smears, etc.), family planning and routine problems, are provided by the family physicians, residents or nurse practitioner. Birth control pills are available at a reduced cost for students receiving their GYN care through student and employee health/family medicine.

All students are required to have health insurance and an excellent insurance policy is available through the campus. At registration all full-time students must either purchase the UMB policy or waive it by showing proof of comparable coverage. The deadline for waiving the UMB policy is in mid-September. If proof of comparable insurance is not received at student and employee health by that time, the UMB policy must be purchased for each month the waiver is not presented. Demonstrated proof of comparable insurance is required each year the UMB policy is not purchased.

Hepatitis B is an occupational illness for health care providers. It has serious consequences and can even be fatal. Immunization against Hepatitis B is required for medical, dental, dental hygiene, nursing, medical technology and PharmD students. The series of three immunizations is given at the Campus Health Office.

All new students are required to complete a Report of Medical History and an Immunization Record form that documents immunity to childhood illnesses. Students failing to present these completed forms as freshmen will not be permitted to register for the sophomore year.

Students' family members can be seen at Family Medicine Associates. The family physicians provide care for the entire family, including obstetrical and pediatric care. For additional information, call (410) 328-8792.

Counseling Center

The Counseling Center provides professional counseling services to students and their families. Students are encouraged to use Counseling Center services for help in dealing with any kind of personal problems they may have. Some of the more common problems that prompt students to seek help include stress, relationship problems, adjustment to changes in school or home life, loss of a loved one and problems with drugs, alcohol or food.

Counseling services are completely confidential and no information is shared with administration or faculty without the student's written permission. This is not a training site; students are always seen by a professional — a social worker, psychologist, psychiatrist, or addiction counselor. Counseling is done on an appointment basis and student's class schedules can be accommodated in scheduling appointments. One will incur no out-of-pocket expense to use this service. Call (410) 328-8484 for additional information.

Housing

Baltimore is a fun, friendly city with many affordable and convenient housing options. The brochure Housing Options describes on- and off-campus options for UMB students; it is available through the admissions office or by calling the Residence Life Office at (410) 706-7766.

The University Housing Office administrators the housing program for University-owned housing. The University owns 80 apartments in a traditional row house format known as Pascault Row. This complex includes efficiency, one-bedroom and two-bedroom arrangements. Each apartment is furnished and contains a living area, kitchenette and private bath and is designed to accommodate one-to-four students. The Pascault Row complex also has a laundry room with coin-operated washers and dryers and each apartment has access to storage in lockers on the ground floor.

For housing application and/or information contact:

University Housing Office
222 N. Pine Street, Rm. 207
Baltimore, Maryland 21201-1575
(410) 706-7766

The University of Maryland's off-campus housing program is a self-service program designed to help students identify housing options convenient to the University. Although the housing program is coordinated by University personnel, it is offered only as a convenient way to facilitate the housing search. The University does not inspect the properties listed through this service and therefore strongly encourages students to personally do so before signing a lease. The University has no relationship with the property owners, landlords or realtors who list property through this service.

The University Housing Office maintains a kiosk in the lobby of the Baltimore Student Union with current information on apartments for rent, rooms for rent, house or condominium for rent or sale and roommate referral. There are also other types of off-campus housing information available at this kiosk such as Apartment Shopper's Guide and Home Buyers Guide.

A website has been created for the University at www.UMB-Apartment-Guide.com. Questions related to off-campus housing can be addressed by calling (410) 706-8087.

Athletic Center

The campus Athletic Center, located on the tenth floor of the Pratt Street Garage [(410) 706-PLAY], offers a variety of programs including intramural sports, fitness/wellness activities, informal recreation, mini-courses and special events. The facility is equipped with two basketball and volleyball courts, a squash court, an expanded weight room with free weights and Paramount equipment, stationary bikes, stair, treadmill and rowing machines and areas to stretch. There are men's and women's locker rooms with a sauna and showers. Students are admitted free with valid student ID. Paid positions for students are available at the Athletic Center.

Intramural sports include basketball, volleyball, racquetball, squash, tennis and softball for men, women, coed and open competition.

It is the Athletic Center's goal to provide a comprehensive fitness and wellness program on campus. Participation in regular physical activity generally maintains or improves physical and mental well-being. The center offers a variety of aerobic classes, a total conditioning class, mini-screening, fitness walking program, and fitness assessments. Individual fitness assessment includes tests for heart rate, blood pressure, weight, flexibility, cardiovascular endurance, body composition and muscular endurance. Participants receive personal evaluation of their fitness levels along with specific suggestions for developing a healthy lifestyle.

In conjunction with the University police the center also offers Rape Aggression Defense (RAD), a women's self-defense course. Sessions are offered throughout the year and are taught by trained and certified instructors.

University of Maryland, Baltimore students may also use the athletic facilities at UMBC which include both indoor and outdoor Olympic-size swimming pools, outdoor hard-surface tennis courts and Nautilus weight-training equipment. A shuttle bus operates between the two campuses

Student Center

The Student Center at Pine Street houses many services of interest to students ranging from an ATM, Auxiliary Services Office, University Bookstore, a Commuter Lounge with a big screen TV and computer terminals, Caravan Dispatch Center, a coffee bar, Counseling Center, meeting space, One Card office, the Residence Life Office to assist students with both on-campus and off-campus housing, Student Government/Student Oragnizations Office space, the campus-wide Student Service Office, vending machines, a Wellness Resource Center, and Writing Center.

The building is open Monday through Friday, 8:00 a.m. through 11:00 p.m. and on Saturday 10:00 a.m. through 2:00 p.m. to accommodate bookstore hours. To reserve meeting space in the Student Center call 410-706-8087 or stop by the Student Center Operations Office in Room 211.

Parking and Transportation

On-campus parking is available to students. Commuter students must have a parking permit ($5.00) which allows campus parking but does not guarantee a space. The best options are the Lexington Garage (Lexington and Pine Streets) and the Saratoga Garage (Saratoga and Arch Street entrances) at the current student rate of $4.00 a day (first-come, first served). Students may purchase student vouchers for parking instead of paying with cash. Once you purchase a student daily permit, you many buy the vouchers, which are sold in packages of 10 for $40.00.

Students who live in on-campus housing pay for parking by the semester or year and are guaranteed 24-hour parking in a garage adjacent to their residence facility. For more information about parking on campus, write Parking and Commuter Services, University of Maryland Baltimore, Baltimore, Maryland 21201, call 410-706-6603 or visit the website www.parking.umaryland.edu.

Students who live in the communities adjacent to UMB can use the caravan shuttle, which operates in the evenings year round. An intercampus shuttle provides transportation between the University of Maryland Baltimore County (UMBC) and UMB. For schedules and information on either of these shuttles call the Parking & Commuter Services Office at (410) 706-6603.

Public transportation makes the campus accessible by bus, subway and light rail. More than a dozen MTA bus routes stop in the campus area. The Baltimore Metro (subway) runs from Charles Center downtown to Owings Mills in northwestern Baltimore County. A light rail line offers service with park-and-ride accommodations from Hunt Valley in northern Baltimore County to Glen Burnie in Anne Arundel County. The UniversityCenter stop is located at Baltimore and Howard Streets.

School of Medicine Departments

Anatomy and Neurobiology
Professor and Chair
Michael T. Shipley, PhD

The brain is a major frontier in biological research. Significant progress has been made in recent years in understanding the brain, from the level of molecular genetics and neural networks to behavior, the final product of neural activity. The Department of Anatomy & Neurobiology focuses on brain organization and function in medical, graduate and postdoctoral education. An outstanding heavily funded faculty, modern well-equipped laboratories and state-of-the-art instrumentation make this effort highly successful and internationally visible.

Faculty Research Interests
Major research efforts in the areas of developmental neurobiology, sensory systems and neural networks have been added to existing strengths in cellular neurophysiology and neuroendocrinology. A wide variety of research opportunities are made possible by extensive collaboration among departmental faculty and neuroscientists in other departments and at other institutions. Departmental faculty investigate questions from the molecular to the system level, from gene expression through assembly and function of specialized cell-membrane domains to development, function and plasticity of neuronal networks. Our faculty apply contemporary molecular, physiological and anatomical techniques to these questions.

Undergraduate Medical Program
The medical educational goal of the Department of Anatomy & Neurobiology is to provide a basis for understanding the development, structure and function of the human body. To this end, department faculty are major participants in two integrated teaching blocks, Blocks II and VI, and have minor teaching involvement in Blocks IV and VII. Block II, Structure and Development, combines gross human anatomy, microanatomy (histology), embryology, radiology, surgery and physiology. In Block VI, Neurosciences, neuroanatomy is integrated with neurophysiology, neurochemistry, neurobiology and clinical neurology. In both blocks, lectures are correlated with practical laboratory assignments. Thus, the student is provided with a comprehensive treatment of the subject matter and has ample opportunity to learn important clinical implications and research applications.

Graduate and Postdoctoral Programs
Graduate students are encouraged to investigate critical biological questions by applying a broad range of experimental approaches. Graduate programs lead to the PhD or MD/PhD degrees. The program of study is uniquely tailored to individual student needs to establish a foundation in molecular and cellular biology with a minimum of required coursework. In addition, courses in principles of neuroscience, developmental neurobiology, modern neuroanatomical methods, the structure-function of membranes, ion channels, synaptic transmission, imaging, and reproductive physiology and endocrinology are available as well as journal clubs in neuroscience, chemosensory neurobiology, membrane biology and reproductive biology. New courses in the analysis of neural networks and innovative mini-courses that focus on scientific writing and preparation of grant applications to further prepare students to become competitive scientists are planned.

The department also has an NIH-funded postdoctoral training grant and attracts a high number of outstanding postdoctoral fellows.

Anesthesiology
Martin Helrich Professor and Chair
M. Jane Matjasko, MD

The Department of Anesthesiology provides a required rotation for students during their junior year (GSUR 531-01). This weeklong rotation includes clinical experience in the operating room as well as didactic experience. Students receive instruction in basic airway, pharmacology and

anesthetic techniques. A sub-internship rotation in the surgical intensive care unit and several month-long similar electives are offered by the department. A brief description of each course follows:

Sub-Internship (548-01)
The goal of this course is to provide the student with clinical experience in the evaluation and management of critically ill patients, primarily, but not exclusively, surgical patients. The student spends the majority of the time during this rotation working in the surgical intensive unit (SICU). The student will participate in daily work and teaching rounds and have responsibility for the care of assigned patients under the direction of the SICU physician team. Students admit patients to the unit, perform history, physical and laboratory assessments, present patients on rounds and provide ongoing care.

Anesthesiology (ANES 541-01)
A month elective in anesthesiology providing active "hands-on" clinical participation to provide broad insight into the practice of anesthesiology. Students learn how this specialty functions in preoperative evaluation, intraoperative management and post anesthesia care as well as consultation services in pain management. Application of the basic sciences during anesthesia is also presented.

Pain Management Center (ANES 542-01)
This elective offers students broad exposure to strategies and techniques employed in pain management. At the University of Maryland Pain Management Center, students will participate in the evaluation and management of patients with chronic pain syndromes. Alternative therapies (acupuncture and hypnosis) are often incorporated. Students also participate in daily morning rounds on the Acute Pain Management Service. This consult assists in the management of hospitalized patients with particularly challenging post-operative use of opioids in pain management.

Graduate Program
The program has a continuing commitment to the development of astute clinicians, avid researchers, excellent graduate and undergraduate educators, and quality, compassionate patient care. The department administers over 20,000 anesthetics per year.

The residency is accredited for the training continuum of three years. The diverse curriculum permits candidates to fulfill the educational requirements for entrance to the American Board of Anesthesiology examination system. Appointments are made at the CA-1/PGY-2 level. The Clinical Base Year (CB/PGY-1) is arranged by the candidate.

Residency training consists of supervised daily instruction in the care of patients requiring surgery, obstetric care, pain management, critical care services, and preadmission evaluation. Experience is provided in postoperative care, resuscitation, respiratory and circulatory emergency care, and ventilator management.

Postgraduate Fellowship
Individuals may choose to complete subspecialty fellowship training (12 to 24 months) beyond the three clinical anesthesia years. There are accredited fellowships in critical care medicine and pain management, as well as advanced subspecialty fellowship training in cardiothoracic, neurosurgical, obstetrics, trauma, and research.

A fully accredited one-year fellowship program is available in anesthesiology critical care. The curriculum includes nine months of critical care experience in the intensive care units at the University of Maryland Medical Center and Shock Trauma Center, one month of echocardiography, and two months of an elective.

The accredited Pain Management Fellowship includes acute, chronic, cancer pain management with modalities of acupuncture, biofeedback, psychotherapy, physical therapy, nerve blocks, transcutaneous nerve stimulation, patient controlled analgesia, intrathecal and epidural opiates via implantable pumps. Clinical research opportunities are available.

Biochemistry and Molecular Biology
Professor and Chair
Giuseppe Inesi, MD, PhD

Biochemistry, including molecular biology and gene expression, seeks to understand the phenomena of biology in terms of molecular structure and interaction. It permeates all of modern biology and medicine and is a fundamental prerequisite to other medical sciences, particularly pharmacology, microbiology, cell biology, pathology and the clinical sciences.

The teaching goal of the department is to present a concise but comprehensive lecture-conference course including as major subjects: proteins, enzymes, nucleic acids, intermediary metabolism, energy production and utilization, chemical aspects of hormones, protein and nucleic acid biosynthesis, with general reference to cell and molecular biology and genetics.

The Department of Biochemistry and Molecular Biology faculty is involved in teaching the first-year blocks; Block IV-Cell and Molecular Biology, Block V-Neurosciences and Block VI-Functional Systems.

Undergraduate Medical Program
Cell and molecular biology courses are concentrated in a ten-week period in late fall of the freshman year. Activities include plenary lectures, small group conferences with problem-based learning, independent studies and a series of correlative medicine sessions to demonstrate the application of biochemistry to the understanding of human disorders.

Graduate Programs
The Department of Biochemistry and Molecular Biology also offers PhD programs, and a MD/PhD program. Classroom teaching for graduate students includes courses in introductory biochemistry and molecular biology, proteins and enzymes, biochemistry seminar, muscle: contractility and excitation-contracting coupling and advanced molecular biology. In addition,

several professors are available as advisors for fulfillment of experimental theses in funded research laboratories.

Students interested in biochemistry and cell and molecular biology are encouraged to contact individual faculty members about opportunities for part-time or summer research. Limited funds have been made available to support part-time research assistants.

Faculty Research Interests
Research interests within the Department of Biochemistry and Molecular Biology are numerous and include studies in membrane transport and membrane biochemistry, eukaryotic and prokaryotic molecular biology, virus assembly, enzymology, fluorescence and NMR spectroscopy, X-ray crystallography, calcium regulation mechanisms, receptor mechanisms, DNA damage/repair, as well as many others.

In addition to the individual research programs within the Department, several members of our faculty have collaborative research activities within the Greenebaum Cancer Center. The department is also widely recognized for its Center of Fluorescence Spectroscopy, directed by Dr. Lakowicz; the High Resolution NMR facility directed by Dr. David Weber, a training program in muscle biology directed by Dr. Martin Schneider, and an NIH Program Project entitled "Local Signals and Macromolecular Architecture in Heart" directed by Dr. Rogers. In addition, a new faculty member to the Department is currently working with the Greenebaum Cancer Center to set-up a State of the Art X-ray Crystallography Facility. Together with the NMR facility, they should provide a tremendous research resource not only to our faculty members but to the School of Medicine as well.

Dermatology
Professor and Chair
Anthony A. Gaspari, MD

Dermatology faculty teach in the second-year Immunology, Host Defenses and Pathophysiology and Therapeutics blocks. During the ambulatory block of the third year medicine students rotation, all students attend eight half-day sessions in the clinic with faculty and residents.

DERM 541. Dermatology Elective. Dermatology may be taken as an elective during the fourth year. Students work together with the dermatology residents and attending physicians in the diagnosis and treatment of a large number of patients with cutaneous disorders. Emphasis is placed on developing proficiency in dermatologic examination and description. Students actively participate in grand rounds, daily seminars and the weekly journal club. They also attend the clinical sessions of the Maryland Dermatological Society. A brief oral presentation and short final examination are required.

Graduate Program
The University of Maryland has a three-year residency program in dermatology which stresses both the clinical and research aspects of this specialty. One year of internship in a primary care field is required. The usual conferences in a dermatology program, such as pathology,

mycology, immunology and allergy, basic sciences, journal club, radiation therapy, pharmacology and clinical textbook review, are included in the program.

Dermatology Residency Program
The University of Maryland has a three-year accredited program in dermatology, which stresses both the clinical and research aspects of the specialty. Each house officer will be assigned his/her own patients during this time, and will average at lease 15 patients individually per day. We have the largest clinic in the area and have affiliations with the adjacent Veteran's Administration Medical Center. Our program offers a cooperative attending staff, a large number of patient encounters, excellent facilities, and a clinic experience where you see your own follow-up patients over an extended time. A good dermatologist requires knowledge of the progress of the therapy of chronic disorders. This knowledge can only be obtained by following patients for months to years. There are one or two residency positions available each year.

Conferences
The didactic training sessions are conducted by the faculty, selected by the residents and regulated by the resident staff. Conferences, including pathology (unknowns and test review), immunology and allergy, basic sciences, mycology, journal club, pharmacology unknown kodachromes and clinical text reviews are included in our program.

Clinical Dermatology
The clinics at the University of Maryland Medical Center and the Baltimore Veterans Affairs Medical Center meet in the mornings and afternoons respectively. All of the patients are under residents' care with monitoring by chief residents and/or attending staff. The fact that residents attend these clinics daily and have primary responsibility for the patients over the course of three years is unique in American dermatological training programs. Every afternoon, one resident serves as in-hospital consultant. Every morning, one resident runs a busy phototherapy unit at the VA. Surgical clinic meets weekly.

Research
Research experience is available at the University of Maryland dermatology service. Residents are required to participate in a project during their residency years. Adequate funds for supplies and technical help are in place. Any research proposal requiring the guidance of faculty in another department can be pursued in the laboratories of those departments within the medical complex.

Surgery
The dermatological surgery experience is excellent. "Hands on" procedural instruction is routine. The Department of Dermatology has a full-time Mohs' surgeon and an excellent surgical conference schedule. A busy skin cancer surgery practice is available at the VAMC. Cosmetic dermatology clinics are also held once a month at our clinics. Residents, under the supervision of an attending, gain experience with these procedures.

Electives
Elective time to pursue students' own interests with dermatology or other related fields has been made available for senior residents. This has been usually taken during the winter months, in

such fields as pathology, immunofluorescence diagnoses, phototherapy or dermatological surgery.

Student Electives/Fellowships
We do not offer surgical or other types of fellowships. While we do not offer research positions or research electives, we do offer a clinical elective for 4th year students who have completed their internal medicine rotation. The elective is very popular, and priority is given to University of Maryland students. Interested students from other institutions should apply to the University of Maryland Office of Student Affairs with several months notice.

Application Process
Applications will be accepted THROUGH ERAS ONLY. The deadline for completed applications is December 1 of each year. Interviews are held in January by invitation only. We participate in the NRMP match. We will accept applications from individuals who have completed more than one postgraduate training year. Please address questions to the residency coordinator at (410) 328-5766.

Diagnostic Radiology & Nuclear Medicine
Professor and Chair
Reuben Mezrich, MD, PhD

Since German physicist Wilhelm Conrad Roentgen discovered the x-ray in 1895, radiology has become an integral part of our healthcare delivery system. With advances in technology, radiologic studies now establish or verify the diagnosis in three out of four cases of organic disease. The development and integration of nuclear medicine, ultrasonography, computed tomography and magnetic resonance imaging (MRI), has provided diagnostic imaging with an even more central role in diagnosis and selected (interventional) therapeutic procedures. The radiology department at the University of Maryland has state-of-the-art facilities and cutting-edge technologies, making it one of the most sophisticated in the world.

Research Interests
Clinical research is the main focus of departmental research activity. Multiple divisions within the department are pursuing a wide variety of research in state-of-the-art technologies including spiral CT, MR imaging, PET nuclear medicine imaging, teleradiology, and "filmless radiology" (picture-archiving and communications systems - PACS). The department was among the first in the nation to introduce CT fluoroscopy for intervention and portable CT for intensive care imaging. Specific projects include the development of CT angiography for the investigation of chest pain and cardiac disease, the assessment of MR pulse sequences to improve diagnosis and the use of ultrafast whole body CT for the rapid diagnosis of severe trauma. A complete computed radiography and PACS system is installed in University of Maryland Medical Center and the Baltimore VA Medical Center.

The department is organized into the subspecialty sections of abdominal imaging, angiography/interventional radiology, breast imaging, chest radiology, musculoskeletal radiology, neuroradiology, nuclear medicine, pediatric radiology, trauma radiology and ultrasonography. The subspecialty organization and multiple interdepartmental conferences

facilitate collaboration with diverse clinical specialties. Current projects include cooperative studies with physicians in the Greenebaum Cancer Center, MR evaluation of renal-pancreas transplants, CT assessment of patients undergoing lung volume reduction surgery. Many other projects are underway in cooperation with physicians in the Maryland Shock Trauma Center, evaluating the usefulness of CT and MRI in the diagnosis of head, visceral and skeletal trauma. Multiple cooperative cardiovascular nuclear medicine studies are progressing with the Department of Medicine's Division of Cardiology.

Undergraduate Medical Program
The Department of Diagnostic Radiology offers the medical student an opportunity to acquire a broad base of knowledge related to imaging in almost all aspects of medicine. Formal instruction begins during anatomy in the first year and pathology in the second year. During the third or fourth year, students may elect to take the basic radiology course (RADI 540). The curriculum is supplemented with small group case discussions with the faculty and contact through interdepartmental rounds and conferences involving radiology during clinical rotations.

Third or Fourth Years Basic Radiology Elective, RADI 540
Small groups of students are assigned for a period of four weeks to the radiology department. Groups are subdivided to allow individual instruction as the student rotates through a series of observation periods in selected subspecialties within the department. Students also receive an introduction to the Department of Radiation Oncology. Reading assignments, slide-tape exercises, a student teaching file and seminars form the core of the learning experience. Students attend departmental conferences and joint conferences with other departments.

Third and Fourth Years Subspecialty Radiology Elective
Students learn more about appropriate use of diagnostic imaging and interpreting images. The curriculum is flexible, tailored to the needs of the student's career choice. Students are expected to investigate a small aspect of imaging within their area of interest and make a short presentation to the faculty and residents. This presentation and overall performance, as evaluated by the curriculum supervisor, serve as the evaluation criteria for this elective. Students are given the opportunity (in all sections) to perform clinical and/or lab research, correlate imaging evaluations, do statistical analysis, run literature reviews, etc.

Graduate Program
A four-year residency is offered in diagnostic radiology at the University of Maryland Medical System. Fellowships are offered in computed body tomography/ultrasonography/MRI, interventional and vascular radiology, neuroradiology, critical care trauma, musculoskeletal radiology, women's imaging, nuclear medicine and chest radiology.

Epidemiology & Preventive Medicine
Professor and Chair
J. Glenn Morris, Jr., MD, MPH & TM

Modern epidemiology is a biomedical discipline at the interface of clinical practice and basic medical science. Preparation for the practice of medicine requires knowledge not only of clinical

medicine and basic medical science, but also epidemiology, research methods, biostatistics and social science.

The department is engaged in teaching, research and service across the spectrum of public health and preventive medicine. The faculty has expertise in clinical epidemiology, biostatistics, bioinformatics, environmental and occupational medicine, molecular epidemiology, pharmacologic epidemiology, clinical preventive medicine, health services research, aging, behavioral sciences, infectious diseases, international health, women's health and clinical research methods.

Departmental courses, seminars, journal club, clinical assignments and supervised research experiences are offered to enhance the physician's capabilities in these areas of increasing importance to clinical medicine. Interdisciplinary relationships have been formed with other departments and clinics within the University of Maryland Medical Center and throughout the region.

The department introduces principles of epidemiology and biostatistics, clinical research methods, occupational and environmental medicine and, organization of the health care system in the second year, and shows their application to clinical medicine in the third and fourth years of the medical school curriculum.

MD/PhD students can elect to pursue their PhD degree in epidemiology or in molecular epidemiology. Another option for medical students interested in epidemiology and preventive medicine is a combined MD/MPH or MD/MS degree.

The department sponsors an ACGME approved two-year residency program leading to board certification in preventive medicine. The program prepares physicians for positions in federal health agencies, state health departments, hospitals, medical schools, public health institutes and industry, as well as for the practice of clinical preventive medicine.

Many of the graduate courses, tutorials and research experiences are available to medical students during their elective periods. Students are welcome at departmental seminars listed in the academic calendar and at the journal club which is scheduled each week throughout the academic year.

Community service activities of the department are carried out in health planning, research and evaluation through active collaboration with hospital clinics, health departments, governmental agencies and voluntary organizations concerned with public health problems.

Research Interests

Department research activities cover a broad range of faculty interests. Clinical and community intervention studies are directed toward the causes and prevention of major chronic diseases. Environmental and genetic risk factors associated with disability are an area of active research. Research on hip replacement outcomes, as well as treatment of Lyme disease, exemplifies increased attention to the study of medical care effectiveness and outcomes. Behavioral change research, particularly smoking cessation and diet modification, focuses on establishing and

maintaining a healthy life style. The department's program of international health has a research project on viral hepatitis in Egypt and investigates the prevention and control of infectious and tropical diseases in other parts of the world. Women's health throughout the life cycle has become a recent research concentration; musculoskeletal and reproductive health are of particular interest.

Undergraduate Medical Program
Second Year
Biostatistical and epidemiological methods, principles of occupational and environmental medicine and organization of the health care system are integrated into the blocks of systems-oriented instruction in the second year. The emphasis is on providing practitioners with the tools necessary to evaluate the scientific medical literature critically regarding issues such as disease etiology and diagnostic testing, as well as preventive and therapeutic interventions. These concepts are introduced in lectures and applied in exercises in small-group sessions. The exercises complement systems-related material introduced by other disciplines and relate to research papers which address clinically relevant issues.

Clinical Years
The applications of preventive medicine to clinical medicine are integrated into clinical rotations both by formal presentations and by patient-related discussions with clinical preceptors. Emphasis is placed on the important role of the physician in health promotion and disease prevention and the application of evidenced-based medicine to clinical problem-solving. Senior year electives are offered in public health, occupational medicine, preventive medicine research, and international health.

Electives
Elective opportunities are available for medical students, including tutorials with selected faculty members, supervised research experiences and field experience. Offerings include the following:

PREV 541. Introduction to Public Health Practice
PREV 542. Tropical Medicine and International Health
PREV 545. Health Problems in Developing Countries
PREV 589/599. Research in Epidemiology and Preventive Medicine

Summer Fellowships
Summer fellowships in preventive medicine are available to a limited number of students. Each student works closely with a faculty member and undertakes a research project in some aspect of preventive medicine or epidemiology. Students also participate in departmental seminars, journal club and workshops that enhance interaction with faculty members, residents and other students. Elective credit may be given upon completion of project requirements.

Graduate and Postgraduate Studies
The department's graduate program consists of a PhD in epidemiology and an MS in epidemiology and preventive medicine, as well as the MD/PhD, MD/MPH and MD/MS combined degrees available to medical students. Work toward the PhD in the combined

MD/PhD degree program will normally occupy at least three years between the second and third years of medical school. Contact the MD/PhD program office [(410) 706-3990)] for information about stipends. The combined MD/MPH and MD/MS degrees may require one year in addition to the usual four-year medical school curriculum which also satisfies one year of the requirements for board certification in preventive medicine.

The department has a postgraduate two-year residency program in preventive medicine leading to eligibility for certification by the American Board of Preventive Medicine. The residency provides a variety of individually planned opportunities for advanced study and practice in epidemiology, biostatistics, computer science, health care administration, gerontology and occupational health. Components of the residency program include required and elective graduate-level courses, a variety of seminars, journal club and workshops, supervised research experiences and field placements in public health or research settings. Course work leads to a Master of Science degree in epidemiology and preventive medicine or a Master of Public Health degree.

In cooperation with the Departments of Medicine, Pediatrics, Family Medicine and other clinical departments, combined residency programs may be arranged for qualified applicants leading to board-eligibility in both preventive medicine and a clinical specialty.

Family Medicine
Associate Professor and Acting Chair
David L. Stewart, MD, MPH

The Department of Family Medicine educates family physicians to render high-quality medical care to individual patients and families of all ages in a continuous and comprehensive manner. Family physicians are responsible for patient care at the point of entry into the health care system; providers or coordinators of health care at the secondary and long-term care phases of illness; and coordinators of tertiary care.

The department offers educational experiences in family medicine for students at the University Family Medicine office, on the Family Practice Inpatient Service, and through an interdisciplinary, longitudinal educational program that is guided by a staff of experienced family physicians. Moreover, students may participate in community health services, supervised practice experiences and health care research.

Within the discipline of family medicine, several areas are emphasized. The department provides regular house calls for 50 frail, homebound elderly in the city. The department has a division of behavioral medicine that further integrates the teaching of basic science, clinical medicine and the psychosocial aspects of health care. The division assists in the education of substance abuse, training issues related to family violence and abuse, and common mental health conditions seen in family medicine, such as anxiety and depression.

The department has a Program in Complementary Medicine (CMP). The Complementary Medicine Program is an interdisciplinary program within the University of Maryland School of Medicine which consists of four inter-dependent units: 1) research 2)

database/literature evaluation 3) education and 4) clinical care. CMP is directed by Brian Berman, MD and currently employs 25 people. The academic offices of CMP are based in the Mansion House at the James L. Kernan Hospital; basic science lab is located in the School of Medicine's Howard Hall, and the integrated medical clinic is part of the University Physicians' clinic at Kernan Hospital. A scientific advisory board meets yearly to give guidance on all aspects of the Program.

The department has developed an active sports medicine division. Family medicine physicians participate in the care of the Baltimore Ravens, University of Maryland Terrapins and the Coppin State athletes. A fellowship in primary care sports medicine is available.

The department has a major focus on providing health care to underserved patients and communities, involving community outreach and disease prevention.

Research Interests

The research efforts of the Department of Family Medicine reflect the broad interests of the department's faculty. Current projects, which are clinically oriented and relate to current medical problems, range from epidemiologic studies to evaluations of specific therapies. The department has a strong interest in health promotion and nutrition, especially as they relate to the family and the elderly. The department concentrates on investigating ways to improve community health. Collaborative efforts with other departments involve investigations into health promotion, screening for HPV infections and the management of the abnormal PAP smear. During their last year of training, all family medicine residents are required to complete a research project and to present their results at the Annual Family Medicine Residents' Research Day. The department faculty, fellows and residents present their research at national meetings, and in journals, books and other publications.

Undergraduate Medical Program

Minimester Electives. During the summer months, students may elect to spend time in the office of a selected family physician in order to observe the varied professional activities of a physician practicing in the community. During preceptorship experiences, students may participate in direct patient care or primary health care research.

Family Care Track Program. The Family Care Track (FCT) is an elective undergraduate experience designed to teach medical students the principles of family medicine with a focus on the urban, poor, multi-problem family. It provides a continuous clinical experience through all four undergraduate years. Students are assigned to follow families over the first two years in the department's Family Practice Centers. The families are selected to provide exposure to obstetric, pediatric and geriatric care, and to family dysfunction. Supervision is provided to the individual student and through the use of small group integration seminars for case discussion. The students also are required to complete a community medicine seminar series, a social services preceptorship, a needs assessment, a community project and a four-week clinical preceptorship in sites, including some located in health-professional shortage areas.

Up to 40 students are selected each year from the freshman Longitudinal Elective in Family Medicine to participate in the FCT program. Credits for this elective include four weeks of senior elective credit at the completion of the program.

Longitudinal Ambulatory. The longitudinal ambulatory clerkship is designed to: 1) give students a longitudinal experience in primary care, 2) help the student integrate the management of patient problems through the continuum of initial presentation, outpatient and inpatient clinical medicine, and 3) allow the student to have an extended interaction with a primary care physician for role modeling purposes. Students spend one afternoon every other week with a primary care physician (pediatrician, family practitioner or general internist) during their junior year of medical school.

Third-Year Family Medicine Clerkship. The family medicine clerkship focuses on the guiding principles of family medicine: continuity and coordination of care, comprehensiveness, community, prevention, and family. Students spend four weeks in a family medicine practice in either an urban or suburban locale. Each Friday during the clerkship students meet at the Department of Family Medicine for a series of lectures on the family life cycle and to research, evaluate, and present case studies/patients.

Senior Elective in Family Practice. In this elective, students work with a community family physician preceptor. They have the opportunity, under supervision, to manage problems typical of a busy practice, ranging from obstetrics to geriatrics. There is ample opportunity to be involved in coordinating continuous care of patients over a four-to six-week period. Students begin to understand the patient in relation to family, job and environment. Furthermore, the student observes the role of the physician in society, the social and civic obligations and responsibilities to the patient. Site options range from urban health manpower shortage sites to rural private practice. In these varied settings, students are expected to conduct a limited clinical investigation, using data collected in the practice, and to attend weekly Alcoholics Anonymous or Al-Anon meetings in the community.

Senior Sub-Internship in Family Practice. The Department of Family Medicine offers an eight-week internship to senior students. This is an extensive inpatient experience utilizing the family medicine inpatient service. Variety is a major attraction as the patients' needs range from newborn care and obstetrics to adult general medical and geriatric care. The student is exposed to the family practice approach to inpatient care with an emphasis on interdisciplinary, comprehensive and continuous care and participates in night and weekend call. Students may choose to accomplish the rotation at University of Maryland Medical Center or Union Memorial Hospital. The rotation at Union Memorial is primarily an internal medicine experience.

Senior Ambulatory Clerkship in Family Practice. Students may select University Family Practice as an option in the required Senior Ambulatory Course. This eight-week rotation exposes students to the clinical practice of the Department of Family Medicine residency program. In this setting, students are scheduled to see patients daily in the University Family Practice Center, work with a variety of preceptors from the Department of Family Medicine and participate in didactic sessions. This ambulatory experience is designed to expose students to the principles and practice of family medicine.

Graduate Medical Program
The University of Maryland's approved three-year residency in family practice is one of the oldest in the nation. Approximately 30 residents are enrolled in a three-year program. The program's goal is to provide comprehensive training in the specialty, utilizing the latest information and educational methods. Resident training takes place both at University of Maryland Medical Center, where the expertise of faculty in all specialties can be utilized, and in several community hospitals where the residents are exposed to a wide variety of patient problems. Flexibility is maintained through the availability of electives in order to accommodate specific needs of the trainee. Although the majority of graduates are actively engaged in family practice in rural, suburban and urban areas, a significant number are pursuing academic careers.

Medical and Research Technology
Professor and Interim Chair
Sanford A. Stass, MD

Medical technology (clinical laboratory science) provides information crucial to the diagnosis and prevention of disease, the management of patient therapy and maintenance of health. Medical technologists are involved in performing laboratory procedures ranging from identification of microorganisms to analysis of body fluids, and providing blood for emergency transfusion. Biomedical science focuses upon the discovery, development and production of diagnostic products and biopharmaceuticals. The biotechnologist uses skills in molecular and cellular biology, immunology, protein chemistry and microbial fermentation to produce reagents and products used in industry, medicine, and in basic and applied research.

Faculty Research Interests
Major research efforts are in areas of molecular regulation of Gram negative bacterial pathogenesis, the anti-cancer function of inositol hexaphosphate (IP6), the molecular study of *Bdellovibrios*, and fetal alcohol syndrome. The Department also conducts beta testing on home glucose monitoring systems.

Undergraduate Program
The department currently offers a Bachelor's of Science degree with a concentration in either Medical Technology (Clinical Laboratory Science) or Biomedical Science Research (Biotechnology). These programs combine the strengths of a major research university with the benefits of small classes and a high faculty-to-student ratio. As a component of a large academic health center, the Department of Medical and Research Technology affords students unusual opportunities to participate in a stimulating educational environment while gaining practical experience in clinical laboratory science and biotechnology through clinical rotations and externships in industry.

Students transfer into the program in their junior year following the completion of 60 credit hours of prerequisite coursework at a regionally accredited community college or university of their choice. Those attending two-year institutions may transfer directly to the Department of Medical and Research Technology. Most students complete the professional curriculum in two years; however, a three-year, part-time option is available for non-traditional students. To

promote the departmental philosophy of life-long learning, all students participate in a formalized student professional development program.

Students completing the medical technology program are eligible for certification from national agencies such as the American Society for Clinical Pathologists, MT(ASCP) and the National Certifying Agency, CLS(NCA). The medical technology concentration of study fulfills requirements set forth by the National Accrediting Agency for Clinical Laboratory Sciences, and the department has received a full seven-year accreditation. Students completing the Biomedical Science Research Track are eligible for certification from the National Accrediting Agency as a specialist in Molecular Biology [CLSp(MB)].

The department has successfully developed a minority outreach program that has contributed to one of the highest percentages of minority enrollment in a science-based curriculum at a majority institution. In addition, a post-baccalaureate certificate program is offered during the day for those individuals who have a bachelor's degree and seek certification in one of the specialty areas of the clinical laboratory, such as chemistry, hematology, microbiology, and immunohematology.

Graduate Education
The department also offers a Master of Science degree in Medical and Research Technology in which students may enroll in either the biomedical science research track or the laboratory management track. The graduate program is designed to provide advanced technological, managerial, and research skills to students with a BS degree in clinical laboratory science, biomedical science research, or other science-related fields. Laboratory management track students must complete a Laboratory Management Practicum that includes submission of a management dossier containing a professional paper written by the student. One-year of professional work experience is required for acceptance into the laboratory management track. Students in the biomedical science research track must complete a thesis.

Categorical Certificate Training Program in Medical Technology
The Department offers a Categorical Certificate Training Program in Medical Technology (Clinical Laboratory Science) for individuals who possess a baccalaureate or advanced degree in chemistry, biology, or other basic sciences. Training is offered in four specialty areas: clinical chemistry, clinical microbiology, blood banking, and hematology. Students enrolled in this program become eligible for certification as Categorical Medical Technologists through the American Society of Clinical Pathology. This rapid-training program can be completed in one calendar year.

Clinical Affiliations
During the final component of the program, students in the medical technology track complete clinical practice courses in four specialty areas: hematology, blood banking, microbiology, and clinical chemistry. The department is affiliated with clinical facilities in the Baltimore-Washington area. Clinical facilities include university-based and community hospitals, as well as independent laboratories, located throughout the Mid-Atlantic region.

Research Affiliations
The biomedical science research concentration requires students to complete five months of externships which may be undertaken in an academic research laboratory or in industry. Externship sites are located predominantly in the Rockville/Gaithersburg research corridor. The number and variety of clinical and research sites are assets that set apart from others the University of Maryland School of Medicine's medical technology and biomedical science research programs, and allow students to experience several different work settings. For additional information contact:

Student Affairs Coordinator
Department of Medical and Research Technology
University of Maryland School of Medicine
Allied Health Building, Room 440-B
100 Penn Street
Baltimore, Maryland 21201
(410) 706-7664

Medicine
Theodore E. Woodward Professor and Chair
William L. Henrich, MD

The Department of Medicine, or internal medicine as it is called in some schools, teaches the body of medical knowledge that enables one to diagnose and treat the illnesses of adults primarily with medicines rather than with operations.

The practitioner of internal medicine is usually called an internist, but he or she may be referred to by the title physician, in the specialized use of the word, which can also be applied to any medical doctor. An internist may be a cardiologist, an endocrinologist, a gastroenterologist, a rheumatologist or a practitioner in one of the dozen or so specialties of internal medicine. But the internist always remains the physician (or the diagnostician as internists were called in former times) whose special competence is solving difficult diagnostic problems and personally applying or obtaining from a colleague the best treatment available.

The term internal medicine, which derives from the German Innere Medizin, was first used during the nineteenth century when many American physicians traveled to Germany and Austria for training in what were then the leading clinics and medical laboratories. According to one medical historian, "Within a decade or so after 1880, internal medicine was differentiated from ordinary clinical medicine, the simple natural history of disease, by emphasizing that it was based on experimental work in physiology and physiochemistry." Internists have always required special training to acquire their knowledge and skills and have continuously shown a particular interest in the scientific basis of clinical work.

Educating medical practitioners for the state and the nation is the principal training responsibility of the faculty of the Department of Medicine, but they also seek to develop in some students a desire to make useful discoveries through basic or applied research.

Fundamental advances in the causes and treatment of disease have often been made by internists, for example, the work on cholesterol metabolism which in 1985 brought the Nobel Prize in Medicine and Physiology to two internists, one a gastroenterologist and the other a geneticist. In keeping with this traditional devotion to the value of research, the Department of Medicine provides many opportunities for students to participate in research and strongly encourages all who may have an interest to experience laboratory work with investigators.

Undergraduate Courses

First and Second Years
The Department of Medicine faculty teach in the first-year Neurosciences and Functional Systems blocks, and in the second-year Pathophysiology and Therapeutics, and Immunology, Host Defenses, Infectious Disease, Epidemiology and Preventive Medicine blocks.

Second Year
PDIA 520. History and Physical Examination. Eliciting an accurate story of the patient's complaints (the history) and detecting abnormal findings by physical examination constitute the fundamental skills of every physician. To acquire these abilities, students attend introductory lectures from members of the faculty; afterwards, groups of two students meet weekly with instructors in one of the University of Maryland's teaching hospitals. The students interview and examine patients with a wide variety of illnesses and then discuss the findings with their teacher who correlates the observations with pathophysiological abnormalities being studied in basic science courses. The course also includes small group sessions with instructors from neurology, pediatrics and psychiatry. This will be incorporated into the Introduction to Clinical Practice block given longitudinally in the sophomore year.

Third Year
MEDC 530. Clinical Clerkship. This is the fundamental course in internal medicine for medical students. The clerkship lasts 12 weeks with eight weeks of inpatient internal medicine and four weeks of ambulatory internal medicine. For eight weeks, the students work with the medical teams caring for inpatients at two of the department's three primary teaching hospitals: University of Maryland, Baltimore Veterans Affairs and Mercy Medical Centers. Students may also have a one-month inpatient rotation at one of our Med Star community affiliates, Union Memorial Hospital or Franklin Square Hospital. Students join the interns, residents, and nurses for work rounds at 7:00 a.m., attend Morning Report at 8:15 a.m., and participate in daily teaching rounds with their attending physician from the faculty at 9:00 a.m. Conferences are held daily; some are case-based sessions facilitated by members of the faculty and are designed to teach problem solving ability. During other sessions, students join the residents and faculty at medical grand rounds, morbidity and mortality, ambulatory conference, as well as Morning Report. During the afternoons and evenings, clerks participate in the care of the team's patients. Students obtain histories, perform physical examinations, obtain and evaluate other aspects of the patient's database, and develop diagnosis and treatment programs with the residents and faculty. During the four weeks of ambulatory medicine, students are assigned to one of several university-based or community sites. The goal of this rotation is to introduce students to the basic concepts of ambulatory medicine. These include problem focused assessments, decisions about urgency and principles of access and continuity of care. Students may spend time in acute

walk-in clinics, general medicine and primary care clinics, as well as selected subspecialty clinics.

Fourth Year
MEDC 548. Student Internship (Subinternship in Medicine). The 4-week student internship in internal medicine, all of which must be spent on the medical services at the University of Maryland, Baltimore Veterans Affairs or Mercy Medical Centers. These inpatient services include general medicine teams, subspecialty services, such as infectious diseases and oncology, and intensive care units, such as the Coronary Care Unit and Medical Intensive Care Unit. Student interns function in the capacity of graduate physicians under the close supervision of the resident and attending physician. Subinterns are on-call in the hospital with their resident physicians one out of four nights. The amount of responsibility delegated to subinterns depends upon the extent of each student's knowledge, dedication and maturity. Successful completion of a subinternship in medicine provides superb preparation for residency training.

Laboratory and Clinical Research Electives. The faculty of the Department of Medicine strongly encourages all students to join them on a full-time or part-time basis to participate in research projects being conducted in the department. This experience may be scheduled at most times of the year. Students with an interest in investigation should talk with members of the faculty or the chair about the many opportunities available in the Department of Medicine.

Graduate Program

Residency Training. Training in internal medicine continues after graduation from medical school in the Department's residency program. Approximately 45 graduates from leading medical schools are appointed to first year residency positions on a competitive basis. Residents receive their training at University of Maryland and the Baltimore Veterans Affairs and Mercy Medical Centers in addition to numerous ambulatory sites. Most first year residents continue their training in internal medicine for an additional two years, thus becoming eligible for certification as diplomats of the American Board of Internal Medicine. A four-year medicine-pediatrics track is available to individuals interested in certification in both internal medicine and pediatrics. Also, a five-year track in medicine-emergency medicine is available. All residents receive intense clinical training in primary care and the medical subspecialties in a variety of ambulatory and inpatient settings under close guidance of the department's faculty. While completing the broad core curriculum, residents have the opportunity to explore clinical and basic science research areas or engage in individualized electives. Residents are expected to develop their leadership, teaching and professional skills while gaining expertise in the vast expanse of internal medicine. Residents completing the training program are very successful at securing subspecialty fellowship, primary care or hospitalist positions of their choice throughout the country. Several of the graduates continue in academic positions both at the University of Maryland and other prestigious institutions.

Division of Cardiology
Professor and Head
Associate Professor and Acting Head
Mark D. Kelemen, MD

Undergraduate Courses

First and Second Years
Selective lectures are given on cardiology topics as part of the Cell and Molecular Biology, Functional Systems and Pathophysiology and Therapeutics courses. Cardiac physical diagnosis is taught in lecture and in small groups incorporating normal subjects and patients with abnormal findings.

Fourth Year
CARD 541-01. Clinical Cardiology Elective. Students are given the opportunity to actively participate in patient evaluation and management recommendations on the consultative services at either University of Maryland Medical Center or the Baltimore Veterans Affairs Medical Center, working closely with a cardiology fellow and attending cardiologist. Skills in electrocardiographic interpretation are taught at sessions three times a week specifically directed to senior medical students. The rotation includes the opportunity for the student to observe both invasive and non-invasive cardiology techniques.

Numerous conferences are held weekly within the cardiology division and student attendance is encouraged. Specific conferences of interest to the students include EKG interpretation, echocardiographic interpretation, clinical cardiology and cardiology grand rounds.

Post Graduate Program
The Division of Cardiology offers a three year clinical fellowship with additional training available in interventional cardiology and electrophysiology. Clinical fellows develop skills in echocardiography, electrocardiography, exercise testing, nuclear cardiology and diagnostic catheterization. Patient management and consultations skills are emphasized. Fellows are encouraged to participate in clinical and basic science research projects.

Hypertension Section (Division of Cardiology)
Professor & Head
Elijah Saunders, MD

Undergraduate Courses
First and Second Years
Selective lectures are given on hypertension as a part of the physiology, pharmacology, pathology and preventive medicine courses.

Fourth Year
Electives are available for fourth-year students who will be exposed to and participate in the entire program of the hypertension section of the Division of Cardiology. This includes

experience and supervision in the diagnosis and treatment of hypertensive patients primarily on an outpatient basis. Daily rounds by senior members of the hypertension division will include students electing this rotation. Students will attend the Hypertension Faculty Practice Office and participate in the care of private patients in a very busy office devoted to the care of difficult hypertension problems. Students will participate in ongoing clinical research programs when appropriate. Students may also elect to attend the weekly cardiology clinical rounds sponsored by the Cardiology Division and the Hypertension and Vascular Biology Center research rounds when scheduled.

Summer Fellowships
Summer fellowships in hypertension are available to junior and second-year students (who have taken physical diagnosis). Participation in clinical drug trials will be offered.

Graduate Program
Electives for a minimum of one month are available for house officers-in-training at the University of Maryland Medical Center and relevant conferences in the Baltimore community can be attended. Electives are encouraged for residents interested in cardiology, nephrology or endocrinology as well as a career in internal medicine with emphasis on hypertension. Trainees will have an opportunity to work with hypertension specialists from other institutions affiliated with the University of Maryland Medical Center the Maryland Department of Health and Mental Hygiene, the Hypertension Commission of Maryland, the American Heart Association, and the Baltimore Alliance for prevention and treatment of hypertension and diabetes, and other programs in the community which have an interest in hypertension.

Although the hypertension section in the Division of Cardiologydoes not currently have an independent fellowship program, training opportunities for fellows in Cardiology andother divisions can be arranged.

Division of Endocrinology, Diabetes and Nutrition
Professor and Head
Alan R. Shuldiner, MD

Undergraduate Courses
2nd-4th years
Research fellowships during the summer (8-10 weeks) and part-time and full-time during the school year are offered for students interested in intensive basic and/or clinical research training. Students are matched with a faculty member based on their research interests. Ongoing basic research interests of the division's faculty members include molecular genetics and genetic epidemiology of type 2 diabetes, obesity, osteoporosis, hypertension and cardiovascular disease, thyroid disease, and longevity; molecular mechanisms of insulin resistance, pancreatic beta-cell ontogeny, growth and maintenance; and functional genomics of adipose and muscle tissue in diabetes, obesity, and insulin resistance. Clinical research interests include genetic and physiological control of energy homeostasis, glucose metabolism and insulin secretion in humans, pharmacogenetics, prevention and treatment of macrovascular and microvascular complication of diabetes, growth hormone deficiency in adults, as well as clinical trials of agents to manage diabetes, obesity and their complications. Students receive didactic teaching in the

molecular, cellular and pathophysiological basis of endocrine disorders and diabetes and participate in weekly grand rounds, clinical conferences, research seminars and journal and data presentation sessions.

Second Year
PATH 520. In the second semester an intensive two-week course is given in collaboration with the departments of pathology, pharmacology, pediatrics and ob-gyn. The course emphasizes the pathophysiologic basis for clinical disturbances of endocrine functions.

Fourth Year
ENDO 541. Clinical Endocrinology and Diabetes Elective. Seniors are provided a broad clinical experience through a four-week concentrated period of training devoted to a study of patients with clinical disorders of endocrine function. Students are involved in the day-to-day diagnostic evaluation and management of both hospitalized patients and outpatients, and participate in weekly clinics (general endocrinology, diabetes, thyroid cancer, hypertension, bone) under the direct supervision of staff members. The pathophysiologic basis for diagnostic and management aspects is presented at daily rounds and at weekly in-depth clinical conferences, research seminars, grand rounds and journal club. A separate elective of 8-12 weeks available to interested students who may desire a longer period of training and/or who wish to pursue a clinical or laboratory research project in depth.

Clinical Endocrinology and Diabetes Rotation (Residents)
Full-time or part-time positions are available for selected candidates who have usually completed one or more years of house officer training. The purpose of this rotation is for residents to gain an in-depth understanding of the pathophysiology of endocrine disorders and diabetes, and to gain hands-on experience in diagnosing and treating these disorders. The resident will work closely with the fellow and attending physician, and will consult in both ambulatory and hospital settings to obtain a broad exposure and experience in diagnosis and treatment of endocrinopathies (thyroid, parathyroid, neuroendocrine, adrenal, bone, reproductive, pediatric). Extensive training in the diagnosis and treatment of diabetes and its complications is provided at the University of Maryland Joslin Diabetes Center, including inpatient rotations through the renal and pancreas transplantation services. Didactic sessions include weekly grand rounds, clinical conferences, research seminars, and journal and data presentation sessions. Residents also have the opportunity to become engaged in basic or clinical research.

Postgraduate Fellowships (Clinical Endocrinology and Research)
Full-time positions are available to selected candidates with MD degrees who have usually completed two or more years of house officer training. Broad clinical inpatient and outpatient activities are designed for subspecialty board preparation. Applications and interviews are required. Competitive stipends are offered. Fellows consult in both ambulatory and hospital settings to obtain a broad exposure and experience in diagnosis and treatment of endocrinopathies (thyroid, parathyroid, neuroendocrine, adrenal, bone, reproductive, pediatric endocrine). Extensive training in the diagnosis and treatment of diabetes and its complications is provided at the Joslin Diabetes Center, including inpatient rotations through the renal and pancreas transplantation services. Didactic sessions include weekly grand rounds, clinical conferences, research seminars, and journal and data presentation sessions. The fellowship is a

two-year program in which the first year is predominantly clinical and the second year (with an option for a third and fourth year) is predominantly research. All fellows conduct independent clinical or basic research programs with graduated autonomy.

Postgraduate Fellowships (Basic and Clinical Research)
Full-time and part-time research opportunities are available for candidates with MD or PhD degrees in basic and/or clinical research. All fellows conduct independent clinical or basic research programs with graduated autonomy. Interested candidates can apply for these positions by submitting their Curriculum Vitae with a cover letter describing their interests in endocrinology and diabetes research. Competitive stipends are available. Typically postdoctoral fellows devote two to three years to an intensive research experience. Ongoing basic research interests of the division's faculty members include molecular genetics and genetic epidemiology of type 2 diabetes, obesity, osteoporosis, hypertension and cardiovascular disease, thyroid disease, and longevity; molecular mechanisms of insulin resistance, pancreatic beta-cell ontogeny, growth and maintenance; and functional genomics of adipose and muscle tissue in diabetes, obesity, and insulin resistance. These research activities are performed in the division's state-of-the-art basic research laboratories located on the 4th floor of Howard Hall. Clinical research interests include genetic and physiological control of energy homeostasis, glucose metabolism and insulin secretion in humans, pharmacogenetics, prevention and treatment of macrovascular and microvascular complication of diabetes, growth hormone deficiency in adults, as well as clinical trials of agents to manage diabetes, obesity and their complications. This research is performed at the Joslin Diabetes Center, the General Clinical Research Center, and in the Division's Amish Diabetes Research Clinic in Lancaster, Pennsylvania. Didactic sessions include weekly grand rounds, clinical conferences, research seminars, and journal and data presentation sessions. Emphasis is also placed on faculty development including the potential for graduate course work, and formal and informal training in grant and manuscript preparation.

Division of Gastroenterology and Hepatology
Professor and Head
Jean-Pierre Raufman, MD

Undergraduate Courses
Fourth Year
GAST 544-01. Clinical Elective. This is a broad clinical experience in consultations, literature review and conferences on gastrointestinal (GI) and liver problems. Students evaluate consultations with GI fellows and senior staff; plan diagnosis and management; and follow patients through definitive treatment and discharge. The rotation includes attendance at six hours of conference, 10 hours of GI clinical rounds and four hours of clinic experience weekly.

Summer Research Electives. GI, liver and nutrition electives are available and may carry a stipend. Individually arranged.

Division of General Internal Medicine
Associate Professor and Head
Louis J. Domenici, MD

The general internist at this institution is an individual who is: 1) skilled in all facets of health care, both acute and chronic, as well as the ambulatory and inpatient level; 2) an educator of peers, students and the public; 3) interested in the impact of health care delivery and its evaluation; 4) an able administrator capable of management decision-making and planning; 5) an active participant in the affairs of the community. In addition, the division of general internal medicine provides education, clinical training and research experience for medical students and graduate trainees to the fellowship level.

The goal of the general internal medicine program is to prepare physicians through inpatient, ambulatory and elective experiences during the students' clinical years and continue with an extensive graduate medical education program. The division's faculty deliver a wide range of primary and consultative health care services for ambulatory and hospitalized patients at university clinical sites, which are also used for student and resident medical training. These clinical sites offer health care to university campus professionals, seniors, veterans and the inner city indigent.

Research Interests
The broad research interests within the division include healthcare worker occupational health, quality measurements in residents and employees in long term care, evaluation of physician and patient behavior relevant to preventive practices, occupational exposure to heavy metals and chemicals and musculoskeletal hazards.

Undergraduate Courses
Selected ambulatory primary care elective experiences are offered as part of the senior ambulatory rotation in internal medicine, and there are clinical and research electives in medical consultation or on specific projects with faculty. These experiences are offered on campus and at affiliated medical institutions.

Graduate Program
The graduate medical education program in internal medicine educates and trains physicians in the principles and practices of general internal medicine. The intent is to prepare clinicians by providing training via a broad internal medicine curriculum. Specialized training experiences are encouraged and are presently available in medical consultation and risk assessment, preventive care, rehabilitation or occupational medicine, as well as health services research. Students and residents are supervised by a team of clinician educators, practitioners and scientists in the program. The faculty include general internists, geriatricians, psychiatrists, epidemiologists, clinical pharmacists, primary care nurse clinicians and social workers.

Division of Geographic Medicine
Professor and Head
Myron M. Levine, MD, DTPH

Graduate Program
Postgraduate fellowships in geographic medicine are offered in conjunction with the division of infectious diseases. Fellows spend their first year doing clinical rotations on the adult or pediatric infectious diseases consultation services at the University of Maryland Medical Center, the Baltimore Veterans Affairs Medical Center, the Maryland Institute for Emergency Medical Services Systems, and the University of Maryland Greenebaum Cancer Center. The second year is spent in clinical or laboratory research under the supervision of faculty members.

Research may be conducted in the laboratories of the division in Baltimore or in one of the division's field areas in Chile or Africa. The division is closely tied to the University of Maryland Center for Vaccine Development. Laboratories are fully equipped for work in molecular genetics, immunology, antigen purification, routine and enteric microbiology, parasitology (including animal studies) and antimicrobial sensitivity testing. Faculty research interests include the pathogenesis and epidemiology of enteric organisms such as Vibrio cholerae and other vibrios, E. coli, Salmonella, Shigella, and rotavirus. Much of the research effort is directed towards developing vaccines against these enteric pathogens and tuberculosis, as well as vaccine testing against malaria and other nonenteric diseases. The division maintains a close relationship with the Department of Epidemiology and Preventive Medicine where fellows may take courses in epidemiology and biostatistics during their training. Application is made through the fellowship program director.

Division of Gerontology
Professor and Head
Andrew P. Goldberg, MD

The goals of the gerontology division, in the Department of Medicine at the University of Maryland School of Medicine are to teach students and house staff the principles of gerontology and geriatric medicine, and to train fellows and junior faculty for academic careers in aging research and clinical geriatric medicine. The program emphasizes research in the biology of aging, the prevention of cardiovascular disease and the rehabilitation of disabled older people in clinical trials which examine the physiological and functional effects of exercise training and nutritional interventions. Educational activities in the division are enhanced by campus wide geriatric and gerontology collaborations coordinated by the Geriatrics and Gerontology Education and Research Program (GGEAR), and the University of Maryland Medical Center for Research on Aging. This enriched academic environment allows trainees to learn skills of clinical geriatrics and basic research for careers in gerontology.

Undergraduate Courses
2^{nd}-4^{th} years
Research fellowships during the summer (8-10 weeks), and part-time and full-time during the school year, are offered in conjunction with the University of Maryland School of Medicine

Office of Student Research for students interested in intensive basic and/or clinical research. Students are matched with a faculty member based on their research interests. Students receive didactic teaching in geriatrics and gerontology, exercise physiology, biostatistics and epidemiology, laboratory techniques, and participate in weekly grand rounds, clinical conferences, research seminars and journal and data presentation sessions.

MEDC 545-23. Geriatric Medicine Elective. There is a wide spectrum of research, clinical and educational programs for students, house staff, fellows and physicians interested in clinical training and research in gerontology and geriatric medicine. There are opportunities for research training in: 1) exercise physiology and nutrition in the management of cardiovascular disease risk factors in high-risk older patients; 2) rehabilitation and longitudinal management of the elderly to maintain functional independence and exercise capacity to prevent institutionalization; and 3) basic mechanisms of age-related declines in cardiovascular, metabolic and musculoskeletal function. Trainees work closely with faculty members in a research curriculum that provides mentored training in clinical and basic scientific investigation and in the conduct of clinical trials. A Geriatric Research Education and Clinical Center (GRECC) and the Claude C. Pepper Older Americans Independence Center provide resources for training in basic research, clinical medicine and health services research focused in prevention and rehabilitation of older patients with risk factors of complications of cardiovascular diseases. Academic programs in these centers seek to increase the basic knowledge of the aging process and prevent disability from cardiovascular disease through clinical trials of aggressive risk factor and rehabilitation interventions. Knowledge gained from these studies is imparted to health care providers, students and trainees through system-wide educational programs.

The clinical programs teach the principles and applications of the treatment and management of older patients with a wide spectrum of acute and chronic medical diseases and preventive geriatric medicine. Instruction is provided in primary, consultative and long-term care of patients in various clinical facilities of the University of Maryland Medical System. Trainees learn the physiology of aging and principles of geriatric assessment, preventive maintenance and the treatment and care of the older patients in ambulatory medical practices, acute in-patient services, geriatric rehabilitation units and in a comprehensive home care program for frail, homebound patients. There is clinical training in geropsychiatry to learn counseling, psychopharmacologic and ethical issues in the management of older patients with mental illness. This approach provides wide clinical exposure and training in relevant skills for an academic career or clinical practice in geriatric medicine.

Clinical Geriatric Medicine Rotation (Residents)
Two week and one month rotations are available for house officers. The purpose of this rotation is for residents to gain an in-depth understanding of the assessment and care of complex frail older patients. Residents customize this clinical rotation to match their interests. Clinical training sites include the Baltimore VA Medical Center Geriatric Evaluation and Management Unit, inpatient consultation service, Baltimore VA Medical Center Hospital Based Home Care Program, and Geriatric Assessment Clinic, and the Baltimore Rehabilitation and Extended Care Center. Experiences in geriatric assessment and long-term care are enhanced through rotations at Union Memorial Hospital, Franklin Square Hospital and Franklin Woods. There are weekly clinical and research conferences, and monthly geriatric grand rounds in conjunction with Union

Memorial and Franklin Square. Residents also have the opportunity to become engaged in basic or clinical research.

Postgraduate Fellowship Training in Aging and Exercise Physiology
The division has an accredited fellowship training program for MDs and PhDs funded by the National Institute on Aging. Research focuses on the effects of exercise and nutritional interventions on the metabolic syndrome, pathophysiology of type 2 diabetes, hypertension, hyperlipidemia and changes in body composition with aging. Post-graduate training emphasizes basic and clinical research in the pathophysiology of aging-related diseases, adipocyte regulation, gene and protein expression in muscle, and the mechanisms by which exercise and dietary interventions prevent cardiovascular disease and disability in at-risk older people. Collaborative research projects can be pursued with investigators in the Division of Endocrinology and in the Department of Kinesiology, University of Maryland College Park.

Postgraduate Fellowship Training
The division has an ACGME accredited clinical fellowship training program in gerontology. The geriatric medicine fellowship focuses on the assessment and care of complex frail older patients, preventive medicine and rehabilitation in the elderly, and provision of care and longitudinal management of the frail elderly to maintain independence and prevent institutionalization. Geriatric medicine fellows learn clinical skills during rotations at the Baltimore VA Medical Center Geriatric Evaluation and Management Unit, inpatient consultation service, Baltimore VA Medical Center Hospital Based Home Care Program, and Geriatric Assessment Clinic. Multidisciplinary teams comprised of geriatricians, nurse practitioners, psychiatrists, Pharm D's, social workers, physical therapists, occupational therapists, and other health care providers manage these patients, and provide an enriched educational milieu for trainees. Training in rehabilitation, geropsychiatry and long-term care is provided at the Baltimore Rehabilitation and Extended Care Center. Experiences in geriatric assessment and long-term care are enhanced through rotations at Union Memorial Hospital, Franklin Square Hospital and Franklin Woods. There are weekly clinical and research conferences, and monthly geriatric grand rounds in conjunction with Union Memorial and Franklin Square. All fellows spend one day/week in the Geriatric Assessment and Continuity of Care Clinic, where they evaluate new patients and develop a patient population for longitudinal clinical management. The clinical fellowship is one year in duration, with the opportunity to add a second year research fellowship. Fellows completing the one year clinical program are eligible for the Certification Examination in Geriatric Medicine.

Division of Hematology and Oncology
Professor and Head
Barry R. Meisenberg, MD

Undergraduate Courses
Fourth Year
HEMA 541-01. Clinical Elective. Broad clinical experience in both malignant and nonmalignant hematologic disorders is available. Students perform hematology consultations with fellows and senior staff and have the opportunity to attend multiple clinical and laboratory conferences within the University of Maryland Greenebaum Cancer Center. Instruction in the interpretation

of flow cytometric studies pertaining to the diagnosis of leukemia and lymphoma is also available. Extensive experience in bone marrow aspiration, biopsy and interpretation is provided. Rotations are for a minimum of four weeks.

MEDC 549-01. Medical Oncology Electives. Two different medical oncology electives are available. Students may choose a subinternship on the inpatient service of the University of Maryland Greenebaum Cancer Center, which provides students and postgraduate physicians with in-depth studies of the diagnosis, natural history and treatment of human cancers. Students will take an active role in the day-to-day management of patients on an inpatient cancer ward and will work closely with the attending and hematology/oncology fellow. Clerkships in oncology provide close interactions with fellows and oncology attendings on the oncology consult service. The wide diversity of internal medicine diseases seen during the natural history of many cancers makes this an intense course in the treatment of many internal medicine problems common to adult patients. Clerkships on the medical oncology consultation service provide interaction with other specialties in the management of as yet undiagnosed patients as well as the early detection, diagnosis and staging of malignancy. Individuals on clerkships are expected to attend a large number of conferences available on a weekly basis that provide didactic information about natural history, new treatments and evolutionary changes in the laboratory understanding of neoplasia.

Research Electives. Summer research electives in various aspects of hematologic malignancies are available. Opportunities are available to work in the cell component therapy section of the University of Maryland Greenebaum Cancer Center (a specialized transfusion service), an active cytogenetics laboratory, an immunology laboratory studying antigenic characteristics of malignant cells, as well as the acquired immune deficiency syndrome (AIDS), electron microscopy laboratory and laboratories engaged in the study of leukemic cell differentiation and cellular pharmacology. Stipends may be available.

Division of Hypertension
Professor and Head
Elijah Saunders, MD

Undergraduate Courses
First and Second Years
Selective lectures are given on hypertension as a part of the physiology, pharmacology, pathology and preventive medicine courses.

Fourth Year
Electives are available for fourth-year students who will be exposed to and participate in the entire program of the hypertension division. This includes experience and supervision in the diagnosis and treatment of hypertensive patients on both an inpatient and outpatient basis. Daily rounds by senior members of the hypertension division will include students electing this rotation. Students will attend the Hypertension Faculty Practice Office and participate in the care of private patients in a very busy office devoted to the care of difficult hypertension problems. Students will participate in ongoing clinical research programs when appropriate.

Students may also elect to attend the weekly cardiology clinical rounds sponsored by the cardiology division and the Hypertension and Vascular Biology Center research rounds when scheduled.

Summer Fellowships
Summer fellowships in hypertension are available to junior and second-year students (who have taken physical diagnosis). Participation in clinical drug trials will be offered.

Graduate Program
Electives for a minimum of one month are available for house officers-in-training at the University of Maryland Medical Center and relevant conferences in the Baltimore community can be attended. Electives are encouraged for residents interested in cardiology, nephrology or endocrinology as well as a career in internal medicine with emphasis on hypertension. Trainees will have an opportunity to work with hypertension specialists from the Johns Hopkins University School of Medicine and School of Public Health, the Maryland Department of Health and Mental Hygiene, the Hypertension Commission of Maryland, the American Heart Association, and the Baltimore Alliance for prevention and treatment of hypertension and diabetes, and other programs in the community which have an interest in hypertension.

Although the hypertension division does not currently have a fellowship program, training opportunities for fellows from other divisions can be arranged.

Division of Infectious Diseases
Professor and Head
Michael S. Donnenberg, MD

Undergraduate Courses
Fourth Year

INFE 541-01. Infectious Diseases Elective. The discipline of infectious diseases is uncommon in internal medicine in that it is not restricted to a single organ system. Indeed the Infectious Diseases Consultative Service serves patients in virtually all departments of the hospital. Many of these patients are among the most acutely ill and they often pose the most difficult diagnostic enigmas. These presentations are more than an academic challenge; many infectious diseases can be cured and the patient restored to previous health.

A practical working knowledge of clinical infectious diseases has become absolutely critical for the following reasons: (1) there has been a huge increase in the numbers of immunosuppressed people, not only from HIV infection but also from the substantial increase in bone marrow and solid organ transplant recipients, the more aggressive use of cytotoxic chemotherapy and more invasive and life-sustaining ICU modalities; (2) the explosion of new antiviral, antifungal and antibacterial agents requiring familiarity with their spectrum of action and toxicities; (3) the proliferation of multiple-antibiotic resistant pathogens which presents virtually untreatable infections; and (4) the focus upon infection control, cost containment and quality of practice which have arisen with the increased attention to the economics of health care. The diagnosis of infections and proper management of patients with these diseases are taught by

exposing students to a broad spectrum of clinical problems. The appropriate use of microbiology, virology and serology laboratories is stressed. The student sees consultations under the supervision of a full-time attending at the University of Maryland Medical Center and Baltimore Veterans Affairs Medical Center. Specialized programs are available in AIDS/HIV, in transplant infections, at Shock Trauma, and at the Greenebaum Cancer Center. A clinical infectious disease conference for faculty, house staff and students is held weekly.

Postgraduate Fellowships
The Division of Infectious Diseases offers two postgraduate fellowship programs: one in General Infectious Diseases and one designed for individuals who which to specialize in HIV care. Within each program, there is a clinical track and a research track. The first year is similar in both programs and tracks. This year is clinically oriented and is spent consulting on patients with problems related to infectious diseases. A very diverse experience is obtained through rotations at the University of Maryland Medical Center and Baltimore Veterans Affairs Medical Center, the Greenebaum Cancer Center, the solid organ transplant service, the inpatient HIV unit, and in the Clinical Microbiology Laboratory. Fellows see consults and supervise residents and medical students, and spend much of their time teaching and providing patient care. This is all performed under the guidance of full-time faculty, many of whom are experts in subspecialties within infectious diseases, such as infections in transplant recipients, neutropenic host infections, surgical infections and infections in HIV-infected people. During the first year the general and HIV programs differ only in the amount of time spent on the inpatient HIV medical service and the general consult service. Those individuals in either program who have chosen a clinical track spend the second year equally divided between the various rotations and on electives. Available electives include rotations in the Shock Trauma unit, in the Baltimore City Health Department, on the infectious disease service at the National Institutes of Health, and performing clinical research. Those individuals on the research track spend the second and subsequent years of the program performing original research. Research interests in the division include molecular pathogenesis of bacterial infections, HIV infections, the physiology of acute inflammation, CMV, HIV, papilloma virus infections, infections in cancer patients or severely traumatized patients, and infection control and nosocomial infections. Research interests within geographic medicine include microbial genetics, pathogenesis of diarrheal diseases, pathogenesis of malarial infections, and vaccine development. During the second and subsequent years the general and HIV program differ in that the electives and research opportunities of individuals in the latter program are oriented toward HIV infection. All fellows participate throughout their fellowship in a weekly longitudinal infectious diseases clinic, where under the supervision of the faculty they follow patients with HIV infections and other infectious diseases. Application is made through the fellowship program director.

Division of Nephrology
Professor and Head
Matthew R. Weir, MD

Undergraduate Courses
Fourth Year

NEPH 541-01. Clinical Nephrology Elective. Students who have completed their required junior electives in medicine, surgery, pediatrics and obstetrics may elect a clinical rotation in nephrology. One-month to three-month electives will be accepted. The student is expected to become thoroughly familiar with the approach to patients with kidney diseases and acquainted with clinical procedures. Each student will present at one nephrology conference. The typical rotation involves the student in consultations with fellows and attending nephrologists, rounds on inpatients, renal clinic activities and exposure to the dialysis and organ transplantation programs. Students with special interests in particular aspects of kidney function or kidney disease may be permitted to pursue those interests after consulting with the division head.

NEPH 541-03. Nephrology Student Fellowship Elective, Maryland General Hospital. Students are exposed to the practice of clinical nephrology and to the management of acute and chronic renal failure and organ transplantation.

Postgraduate Fellowships
Qualified physicians may apply for full-time fellowships in nephrology. Although a one-year clinical fellowship in organ transplantation may be specially arranged, the standard fellowship is for two years of training with the first year structured to produce broad experience in clinical nephrology, dialysis and transplantation, its procedures and its literature and basic experience in the research lab. The second year is largely elective, permitting fellows to pursue their chosen direction with planning and supervision. Additional years of experience for those undertaking special projects are available. Fellows completing this program are qualified and prepared to be certified in nephrology.

Division of Pulmonary and Critical Care Medicine
Professor and Head
Jeffrey D. Hasday, MD

Undergraduate Courses
First Year
Members of the division take part in teaching the physiology course with emphasis on the clinical application to basic respiratory physiology. This includes an introduction to clinical medicine and the sessions in the course on correlative medicine.

Second Year
In the pathophysiology and therapeutics curriculum, two weeks are devoted to the respiratory system. The teaching of clinical medicine is integrated with epidemiology, pharmacology and microbiology. This is not a course in respiratory diseases. The most common and important groups of diseases are discussed as well as the pathology of respiratory diseases.

Fourth Year
PULM 541-01. Pulmonary Diseases Elective. Fourth-year students participate in all of the activities of the division under the supervision of fellows and faculty. They see patients in the wards, in consultations and in the outpatient clinic. The students learn to interpret tests of pulmonary function and attend all of the conferences in which fellows and faculty participate.

Emphasis is on the correlation of clinical features with pathophysiologic and roentgenographic features.

PULM 541-05. Medical Intensive Care Elective, University of Maryland Medical Center. The goal of this course is to provide students with clinical experience in managing patients seen in a medical intensive care unit. Students will function at the sub-intern level as primary physicians and will work with the resident and fellow in charge, as well as the attending physician. Students will receive a sound background in circulatory and respiratory physiology. They will be exposed to various invasive techniques, including arterial line insertions, Swan-Ganz catheterizations and chest tube placements. In addition, there will be exposure to the use of mechanical ventilation in the critically-ill patient.

Postgraduate Fellowships
Stipends are available for the support of nine fellows at the current University of Maryland Medical System postgraduate scale. Three years of training in internal medicine are required. The goal of the program is to train physicians who are competent in the subspecialties of pulmonary and critical care medicine, and in basic or clinical investigation.

Division of Rheumatology and Clinical Immunology
Professor and Head
Marc C. Hochberg, MD, MPH

Undergraduate Courses
First Year
Members of the rheumatology division participate in teaching the immunology section of the microbiology course, the immunopathology section of the pathology course and clinical correlation in the biochemistry course.

Second Year
Members of the rheumatology division participate in teaching the section on Arthritis and Connective Tissue Diseases in the Pharmacology & Therapeutics course using both lecture and small group format. The division also teaches the examination of the musculoskeletal system during physical diagnosis. Students are provided with a copy of the current edition of the Primer on the Rheumatic Diseases.

Third Year
During their rotation on medicine at the University of Maryland Medical System or the Baltimore VA Medical Center, junior medical students interact with rheumatology faculty and fellows on the rheumatology consult service and receive lectures on diagnosis and management of arthritic and connective tissue diseases. Weekly rheumatology grand rounds and journal club are open to students.

Fourth-Year Students and House Officers
The rheumatology division offers a clinical elective for senior medical students and medical house officers designed to present the spectrum of arthritic and rheumatic disease and approaches to diagnosis and management. Integration of clinical features with the mechanisms

of disease processes is accomplished through informal tutorial sessions as well as didactic lectures. The rationale for the various management programs including drug therapies, physical medicine and orthopaedic surgery is emphasized. Experience is gained in performance of diagnostic procedures (e.g., arthrocentesis) and in interpretation of relevant laboratory data. Patients are seen in the out-patient clinics at University Health Center and VA Medical Center, as well as in the Lupus Clinic at the Faculty Practice Office, the Arthritis, Bone and Joint Institute at the James L. Kernan Hospital and on the in-patient consult service.

Postgraduate Fellowships
The division of rheumatology and clinical immunology offers a two-year clinical fellowship and a three-year research fellowship that emphasize training in both the clinical and research aspects of rheumatology. The purpose of the three-year research fellowship is to produce physician-scientists who are well trained clinically and scientifically and who are dedicated to an academic, research-oriented career. Three years of prior training in internal medicine are required.

Microbiology and Immunology
Professor and Chair
Jan Cerny, MD, PhD

Training in microbiology & immunology within the medical school curriculum occurs primarily during the sophomore year when all students are required to take the integrated course on Host Defenses and Infectious Diseases (HDID). Emphasis is placed on basic mechanisms of immunity and immunopathology, principles of microbiology, medical aspects of infectious diseases and related concepts of pathology, pharmacology and epidemiology. The course includes lectures, small-group instruction for case studies and for the discussion of medically-relevant papers, and laboratory demonstrations. The HDID block is taught by basic scientists and clinical investigators to provide an integrated, medically-relevant curriculum.

In addition, selected Graduate School courses are available to medical students in all years. Individual faculty members are available to provide instructions and guidance throughout the medical curriculum. The department also offers the PhD degree and encourages students to enroll in the MD/PhD program.

Research Interests

The research programs within the Department of Microbiology and Immunology are oriented toward the molecular biology of infectious agents, foreign invader-host cell interactions and the molecular and cellular analysis of the immune response. Specific projects in immunology and cell biology include studies on innate immunity, molecular analysis of immunoglobulin and T-cell receptor genes; lymphocyte activation, differentiation and ontogeny; autoimmune diseases and immunology of aging; and cellular and viral oncogenes. Projects on microbial disease mechanisms include studies on regulation of gene expression in procaryotic and eukaryotic systems, molecular genetics of pathogenic bacteria; pathogenesis of vector-borne infectious agents; and new strategies for development of vaccines. The research on vaccine design is carried out jointly with the Center for Vaccine Development. Studies on latent virus infections, including immunodeficiency viruses (HIV) and herpes viruses, are carried out jointly

with the Institute of Human Virology. Medical students are encouraged to participate in elective research programs of their interests.

Undergraduate Medical Program

Second Year. Microbiology and immunology faculty have major teaching responsibility in the second year, integrated course on Host Defenses and Infectious Diseases (HDID). This is the first teaching block of the second year and is approximately 12 weeks in duration. The HDID teaching block includes the relevant aspects of pathophysiology, pharmacotherapeutics and epidemiology. A number of Graduate School courses are available to qualified students. Interested students should contact the department for details.

Neurology
Professor and Chair
William Weiner, MD

Third Year

NEUR 530. Neurological Sciences III. All members of the third-year class have a four-week neurology clerkship. Students rotate on one of the neurology or neurosurgery services at University of Maryland Medical Center or the adjacent Baltimore Veterans Affairs Medical Center. The neurology staff provides a didactic series of lecture-demonstrations. In addition, students attend rounds and assist in the performance of procedures. Under house staff and attending staff supervision, students are responsible for the care of patients with neurological disorders in the critical care units, on the hospital wards, and in the outpatient clinics.

Electives

NEUR 541. Clinical Electives. After completion of the third year, students are offered a variety of clinical experiences on the neurological service at University of Maryland Medical Center,, and the Baltimore Veterans Affairs Medical Center. The neurological examination of the patient is emphasized, as well as the study and application of a wide variety of specialized neurological diagnostic techniques. Each student will become proficient in taking a neurological history, performing a neurological exam, and formulating a reasonable diagnostic impression, differential diagnosis, plan of investigation, and management plan for several of the more common neurological problems.

NEUR 548. Neurological Research Electives. In all four undergraduate years, a limited number of students will have the opportunity to work with individual members of the department in the following areas: 1) cerebrovascular physiology; 2) neuromuscular disease; 3) neurophysiology; 4) neurochemistry; 5) neurovirology and immunology; 6) computers and neurology; 7) epilepsy; 8) degenerative disorders; and 9) molecular-biology and the nervous system.

Student Fellowships

Students who have completed their first, second or third years and have an interest in neurological sciences may apply for additional training in clinical neurology or in one of the research laboratories of the department. Qualified students may receive remuneration as fellows for the 10-week fellowships taken during vacation periods.

Graduate Studies There is a fully accredited three-year residency training program in the specialty of neurology at the University of Maryland Medical System. The program provides for comprehensive clinical training as well as rotation through the associated basic science disciplines. In addition, fellowships are available for subspecialty neurology training, such as EEG and epilepsy, EMG and neuromuscular disorders, stroke, neuroimmunology and neurorehabilitation. For further information contact Dr. Barney Stern, Neurology Residency Program Director.

Neurosurgery
R.K. Thompson Professor and Chair
Howard M. Eisenberg, MD

The Department of Neurosurgery manages patients with a large variety of neurosurgical conditions. The department places special emphasis on cerebrovascular surgery, neuro-oncology, spinal surgery, epilepsy surgery, Gamma Knife radiosurgery and pediatric neurological surgery. Active neurotrauma service at the Shock Trauma Center offers opportunities to not only participate in clinics and the operating room, but also critical care rounds dedicated to the central nervous system.

Research Interests
Two laboratories of specialized research programs are actively maintained within the department. The Cebrovascular/Ion Channel Physiology Laboratory studies cellular mechanisms regulating cerebral blood flow focusing on ion channel function in cerebral smooth muscle using the patch clamp technique. The Neuro-oncology/Molecular Biology Laboratory is devoted to the study of programmed cell death in malignant brain tumors. These basic science research activities are complemented by on-going clinical trials of pharmacological agents for treatment of cranial and spinal trauma, cerebral vasospasms and brain tumors.

Undergraduate Medical Program
Third or Fourth Year (Surgical Subspecialty)
During the third or fourth year, students may choose to spend two weeks on the neurosurgical service as part of the surgical subspecialty clerkship. Opportunities are provided for observing neurosurgical procedures and participating in all service activities.

Fourth Year (Sub-Internship)
A fourth-year elective is available in general neurosurgery. The student works on the neurosurgery service for three weeks and one week on the neurotrauma service. Student responsibilities are significantly enhanced in the operating room and in providing patient care. Special preceptorships in pediatric neurosurgery, neuro-oncology and neurotraumatology are also offered.

Graduate Studies
A training program in neurological surgery is available to graduates of accredited medical schools who have completed one year of general surgical residency. The five-year program based at the University of Maryland Medical System provides residents with the opportunity to

develop their general neurosurgical skills while gaining valuable experience in research and subspecialty areas.

Obstetrics, Gynecology & Reproductive Sciences
Associate Professor and Chair
Hugh E. Mighty, MD

The field of Obstetrics, Gynecology and Reproductive Sciences forms the central core of Women's Health Services and deals with health issues and disease specific to the female half of the population. The department provides a learning experience that encourages each student, regardless of ultimate career choice, to develop professional attitude, diagnostic skills and knowledge relevant to the human female and to her sexual and reproductive systems. This experience enables each student to assume more effective responsibility for the general delivery of health care to the adolescent, adult and aging female, and to the newborn.

The student is taught to recognize those patients who require special gynecologic consultation and those practices necessary for health maintenance and disease prevention in the female population. Health-related reproductive and social issues such as family planning and sexually transmitted diseases are discussed, as well as other aspects of sexual difficulties, sterilization and pregnancy choice.

The educational material is presented to familiarize students with all sources of knowledge relevant to these subject areas. Students may extend their knowledge and skills in a direction and depth appropriate to current and ultimate career goals. Students are also encouraged to take electives in basic, clinical and social research.

The service roles focus on the general areas of obstetrical and gynecologic care. Obstetrics deals with a high-risk pregnancy population and provides excellent educational opportunities for both student and resident. Gynecology provides exposure to operative management of disease, including minimally invasive surgical techniques and clinical anatomy. Specialty clinics in endocrinology, complicated pregnancy, cancer, pre-and postoperative evaluation and family planning provide specific, specialized areas of instruction in addition to serving large numbers of patients. Cancer detection and therapy play a major part in the gynecologic program.

The department utilizes audiovisual aids to enhance the educational experience of both medical students and residents. The faculty also contributes to the postgraduate educational programs at the University of Maryland Medical System and throughout the state.

Undergraduate Medical Program
The Department of Obstetrics, Gynecology and Reproductive Sciences faculty teach in the first-year Cell and Molecular Biology and Functional Systems blocks, and in the second-year Pathophysiology/Therapeutics block.

Third Year
OBST 530. Clinical Clerkship. Students are assigned to obstetrics and gynecology for a period of six weeks. As clinical clerks, they participate in the original diagnostic studies, pelvic exam,

surgical procedures and postoperative care of hospitalized patients. Instruction in prenatal and gynecologic outpatient care is accomplished in our community clinics. Seminars and departmental conferences with the attending staff and house officers are employed for teaching the art of correlating observations, diagnosis and therapy. Frequent and close contact with faculty is achieved by means of a preceptorial system that assigns a group of three to four students to a member of the faculty for the entire clerkship. As an alternative to the clerkship at the University of Maryland Medical System, a similar instructional program is offered to a limited number of students by the obstetrics and gynecology departments at Mercy Medical Center and Franklin Square Hospital.

Fourth Year
OBST 541. Obstetrics and Gynecology Elective. The student may choose to spend a four-week elective in one of five subspecialty areas: high-risk obstetrics, endocrinology, oncology, ambulatory Ob/Gyn, and gynecology.

Affiliated Hospital Electives: Electives are available at Mercy Medical Center and York Hospital in York, PA.

Ophthalmology & Visual Sciences
Professor and Chair
Eve Juliet Higginbotham, MD

Undergraduate Medical Program
The eye is an extension of the brain, and includes both CNS and peripheral structural elements. Ophthalmology is the study of how all of these elements interact optimally to provide high quality visual information, and their diseases. Diseases affecting other body systems also result in ocular changes, and the eye can be used to evaluate such diverse problems as hypertension, hypercholesterolemia, lupus, and oncological disease. Thus, familiarization with the basics of the eye exam are essential for all physicians

Ophthalmology is integrated into the medical school curriculum throughout the four-year period. Introductory lectures in ophthalmology are given in the first year as part of the neurobiology core curriculum. Second-year medical students are introduced to clinical ophthalmologic techniques and common ophthalmologic diseases during the physical diagnosis and pharmacology courses. During their medical clerkships, third-year students participate in both inpatient and outpatient examinations with ophthalmology staff.

Clinical and research electives are available during the senior year. For the clinical clerkship, time is divided between the outpatient clinic and the operating room. Patients with a wide range of diseases are seen together with faculty who have subspecialty interests. Conferences and grand rounds are included in the program. Self-instructional aids are available.

Students are also encouraged to become involved in the Student Sight Savers Program, a community outreach effort that involves students in glaucoma screening activities. This program is run by students and supervised by members of the Department.

Research Interests
A variety of clinical trials funded by NIH and industry are ongoing in the department. Infant vision, retinopathy of prematurity, ischemic optic neuropathy, glaucoma, and AIDS trials are currently in progress.

Research efforts of the department currently concentrate on ocular changes from diabetes mellitus, glaucoma, age-related macular degeneration. Projects include biochemical effects of aldose reductase and its specific inhibitors on development of lens cataract, including oxygen toxicity to the lens, particularly as related to light-induced damage. Also, projects related to corneal biochemistry as well as age-related macular degeneration, ischemic neuropathy, and retinal detachment form a major part of the research program. Elective study opportunities exist for students to participate in ophthalmic research program. This typically runs in one month blocks, but shorter or longer sessions can be arranged.

Postdoctoral fellowships in ophthalmic biochemistry are also available.

Graduate Program
A three-year residency program providing clinical training is offered at the University of Maryland Medical System, with rotations to the Baltimore and Wilmington, Del. VA Medical Centers. Appointment is by application to the Department of Ophthalmology & Visual Sciences at the University of Maryland Medical System. Since ophthalmology is an "early match," interested students are encouraged to complete the ophthalmology elective no later than the beginning of the fall of their fourth year. Applications for ophthalmology are usually due in early September. Residents are expected to conduct a research project and write a paper, in collaboration with a faculty member, on some subject related to ophthalmological interest, due by the end of their third year.

The department also conducts graduate studies in ocular biochemistry, genetics and neurobiology in collaboration with the Graduate School.

Orthopaedics
James Lawrence Kernan Professor and Interim Chair
Vincent D. Pellegrini, Jr., MD

Undergraduate Medical Program
Third Year
As part of the basic surgical clerkship, general principles of orthopaedic surgery are taught and students are introduced to fracture recognition and management, skeletal injury in the poly-trauma patient, orthopaedic reconstructive surgery and to common outpatient conditions affecting the musculoskeletal system. Students electing a clinical rotation during the clerkship participate in patient diagnosis and treatment, as well as operative procedures. Bedside teaching of the musculoskeletal exam is a priority of the rotation. They receive practical instruction in the use and application of various splints and casting techniques. Student conferences and didactic sessions are conducted to supplement the department's intensive academic program.

Fourth Year
The subinternship experience (OSUR 548-02) is specifically designed for the Senior student who is considering a career in orthopaedics. This rotation will provide an opportunity to function as an intern/PGY-1 under the direct supervision of senior orthopaedic housestaff and an assigned faculty mentor. The subintern will assume primary inpatient care responsibilities for hospitalized patients having undergone major orthopaedic procedures and will take in-house call duty with intern responsibility under the direct supervision of the orthopaedic housestaff. The rotation will consist of two consecutive two-week blocks on two of the following orthopaedic services; orthopaedic trauma (Shock Trauma Center), university/spine (University of Maryland Medical Center) and adult reconstruction (University of Maryland Medical Center & Kernan Hospital). In addition, an extensive conference and didactic program will supplement this clinical experience. The subintern will develop a comprehensive approach to the care of acutely hospitalized orthopaedic patients and learn to function in this environment in the role of a house officer.

The elective (OSUR 548-01) experience is designed to give the Senior student broad exposure to all phases of orthopaedics and progressive responsibility in the management of patient care. An extensive conference schedule and didactic program supplements this clinical experience. Over the course of the electice the student will be provided with an introduction to fracture recognition and management, trauma surgery, total joint replacement, spinal injury stabilization procedures, out-patient orthopaedics, sports medicine, tumor reconstructive surgery, and musculoskeletal science. This elective is recommended for all interested students who desire a strong foundation in musculoskeletal medicine and physical diagnosis.

Orthopaedic Residency
The Department of Orthopaedics offers an accredited five-year residency program with an option for an additional dedicated year in the musculoskeletal research laboratory. Clinical and surgical experiences are obtained on the foot & ankle, upper extremity, tumor, total joint, sports and spine services at the University of Maryland Medical Center. Experience with major trauma and spinal injury is obtained at the Shock Trauma Center. The pediatric orthopaedic service is based at Kernan Hospital. An intensive academic program in basic science and clinical orthopaedic surgery has been developed for resident education. Each resident will pursue a clinical or basic science investigative project. The Department of Orthopaedics Sports Medicine section serves as official team physicians to all collegiate teams at the University Maryland College Park campus. Resident rotations are performed at the University of Maryland Medical Center, the R Adams Cowley Shock Trauma Center, Kernan Hospital, Johns Hopkins University, North Arundel Hospital, the VA Medical Center and community practices. Residents are involved in basic science education, formal journal clubs and other didactic sessions. Residents must complete a research assignment.

Fellowship Programs
The Department of Orthopaedics offers a fellowships in orthopaedic trauma.

Otorhinolaryngology – Head & Neck Surgery
Professor and Chair
Scott E. Strome, MD

Clinical Practice
The central theme for the Department of Otorhinolaryngology-Head and Neck Surgery is to create an environment in which research is seamlessly integrated into the practice of OTO-HNS. Clinical practice, research and education programs will be developed and grow around this foundation. From a clinical perspective, it is clear that OTO-HNS is a service-based industry where practices are developed and grown by a blend of clinical/surgical expertise, bedside manner, administrative ability, and development/maintenance of a patient referral base. The clinical practice will be developed around these four central tenets.

Research
Research will be integrated into the clinical practice, following the model of a "bench to bedside and back to bench" approach. Each faculty member will be expected to participate in this program with the degree of participation dependant upon experience, interest and personal goals. It is anticipated that the research effort and associated publications will serve as advertisement for the clinical program. Furthermore, this research will promote academic achievement resulting in departmental recognition at the national and international levels. Most importantly, it is my vision that our research program will serve to better the quality of life for patients with otolaryngologic disease.

Education
The third component of the academic mission is education. Indeed our legacy as individuals and as a department will be judged by those who we train. We have a responsibility to insure that our residents are trained in all aspects of OTO-HNS and have role models that have successfully integrated the practice of medicine into their lives. In order to accomplish these goals, we will emphasize a research-based approach to education – a means to stimulate the importance of continued learning throughout an individuals professional career. It is not realistic to assume that all residents will become interested in academic medicine and research. However, exposure to faculty who enjoy this practice promotes the idea of continued learning. Optimistically, a select few individuals will emulate this career path.

Measures of academic success in the residency will include board scores, acceptance into the premier fellowships in the country, and the ability to recruit the best residency candidates. Additional measures will include publications, presentations and national awards. Finally, and perhaps most importantly, success will be judged by more intangible measures – satisfaction surveys and personal/professional happiness after matriculation.

Pathology
Professor and Chair
Sanford A. Stass, MD

The mission of the Department of Pathology is to advance knowledge that will increase the understanding of disease process and mechanisms. This knowledge will directly aid the development of better diagnosis, treatment, and prevention of human diseases. This goal necessarily includes the instruction and training of students to become biomedical researchers, physician practitioners of pathology, physician researchers, and allied health professionals in

pathology and pathology related disciplines. Our mission is achieved through an experiment-based approach to disease. We believe that pathology is a crucial discipline to carry out translational research that directly bridges basic biomedical science to the patient. Our goals also include continuing the education of health professionals in current concepts and technologies of pathology.

Students achieve this goal in three phases: 1) by acquiring the basic principles of pathology and applying those principles to the diagnosis and study of health care delivery expressed in diagnostic areas such as surgical pathology, clinical pathology, forensic pathology and autopsy pathology; 2) by establishing a philosophy of critical evaluation and judgment concerning the problems of health and disease in humans; and 3) by developing a sense of personal responsibility and ethics for the practice of medicine.

The Department maintains that the study of disease include both structure and function and is conducted from the molecular level to clinical application. Students are exposed to anatomical and clinical hospital pathology services with additional training at the Baltimore Veterans Affairs Medical Center and other local hospitals.

Undergraduate Medical Program
The Department of Pathology faculty teach during both the first- and second-year blocks. However, primary involvement occurs in the second-year with the "Immunology, Host Defenses and Infectious Disease, Epidemiology and Preventive Medicine" block, and in the "Pathophysiology and Therapeutics" block. Pathophysiology and the study of the mechanisms of disease as well as morphology are stressed.

Electives
Elective course offerings supplement the core program for medical students. These Pathology courses are: Laboratory Medicine, Anatomic Pathology, Laboratory & Anatomic Pathology, Autopsy Pathology, Surgical Pathology, Research in Pathology, Special Topics in Pathology and Forensic Pathology. During these electives, students have access to Pathology seminars by guest speakers who are leading authorities in their fields.

Advanced Accelerated Program in Pathology (AAPP)
This program is an effort to permit early specialization and to provide target-oriented education for our medical students. The pathology track begins in the freshman year, making use of all the resources of the Department of Pathology and includes three types of experience: 1) exposure to the practice of pathology, 2) study of one selected field of emphasis, and 3) exposure to research. Up to five students may be admitted during their first year. Students are required to fulfill all the requirements of the track; however, they are not committed to seek a career in the field of pathology. Training in the track program provides the student with the knowledge of a one-year residency program. Time spent in training within the track program can count toward elective credit.

Research Interests
Research efforts in the Department of Pathology focus upon the pathobiologic mechanisms of human disease at the cellular, subcellular and molecular levels. Current projects involve a broad

spectrum of diseases, which include cancer, immunologic disease, transplant pathology, transfusion medicine, hematopoiesis, heart disease, shock, and infectious disease.
Cancer research efforts examine the biology of tumor growth and include the role of growth factors and their receptors in tumor cell proliferation, the mechanisms of apoptotic cell death of tumor cells, and genetic changes with tumor progression in human epithelial and hematopoietic neoplasms. Other studies address problems in cancer treatment including basic immunology and the use of gene therapy in cancer treatment using animal models.

The Department also has a large program devoted to the development of novel and sensitive tests that would ultimately be useful in a clinical setting or for epidemiological research. Such studies include an investigation of biochemical markers for the acute coronary syndromes and reperfusion after thrombolytic therapy and the development and characterization of new markers of myocardial ischemia and injury for use in risk stratification. Another major emphasis is on the development, refinement, and optimization of assays for HIV, hepatitis, herpes viruses, and prions. Other studies are aimed at developing molecular techniques to improve cytogenetic diagnosis and for studying genetic changes in aging; the delineation of the mechanism by which microbes invade and destroy human cells; and the analysis of the events leading to cell death.

Graduate Program
The Department of Pathology offers four graduate program tracks: PhD; combined MD/PhD in medical pathology; Master's (thesis track); Master's (non-thesis track: Pathologist's Assistant training). Areas of concentration offered in the MS degree program of medical pathology include anatomic pathology and clinical chemistry. The master's and doctoral programs train individuals for research and service in pathology and related fields. Research programs use modern techniques, which include quantitative microscopy, flow cytometry with cell-sorting capability, spectrofluorometry, calcium imaging, bioimaging and confocal microscopy, DNA microanalysis and proteomics.

The program track leading to a PhD in medical pathology includes comprehensive training in experimental pathology with emphasis on the pathogenesis of cell injury and carcinogenesis; gene therapy; environmental pathology; development of new diagnostics; and immunology. Students working toward the combined MD/PhD degree in medical pathology are enrolled simultaneously in the School of Medicine and the Graduate School. The specially tailored graduate program recognizes the work and academic achievements of students in the combined program and are designed to meet their specific goals and research interests as physician-scientists.

For details of admission requirements and course offerings, see the pathology section in the Graduate School catalog.

Pediatrics
Associate Professor and Interim Chair
Alice Ackerman, MD

Our Vision
To assure every child in Maryland the very best medical care available in an environment dedicated to children and their families, with services fully integrated to meet individual needs. As the outstanding regional and community referral resource for the primary, specialty and critical care of infants and children, we commit to provide:

- Inpatient care for our sickest children and support for their families, including complete subspecialty and emergency services;
- Strong community service, emphasizing preventive care, especially among at-risk populations;
- Solid clinical and educational experiences for our students and residents–many of them Maryland's future pediatricians, nurses and other health care professionals;
- An emphasis on laboratory and clinical investigations to ensure the leadership role we've established in children's health care research.

We believe that children are our future!

The scope of pediatric practice is represented in our subspecialty division and programs as described below:

- The Division of Adolescent Medicine provides clinical care for adolescents from 12 to 21 years of age in a variety of clinical settings such as the hospital-based adolescent clinic and school-based clinics.
- The Division of Immunology/Rheumatology provides care for a diverse group of patients with special emphasis on immune deficiency diseases. The department is nationally recognized for its HIV evaluation and treatment program.
- Behavioral and Developmental Pediatrics is a division that provides evaluation and treatment services both at the tertiary center and in community sites throughout the state. Care is provided for children with dysfunctional behavior and developmental problems, disabilities or handicaps. Consultation is provided to a number of local schools.
- The Division of Cardiology provides exercise testing, Holter monitoring, pacemaker implants, and two-dimensional echocardiography color flow. A dedicated pediatric catheterization laboratory is the site for state-of-the-art therapeutic interventions. Comprehensive fetal echocardiographic services make the department a leader in the field.
- The Center for Child Protection allows us to combine the expertise of faculty, nursing and social services in advocating for children's issues in the courts as well as advocating on state and national levels.
- A multidisciplinary staff of critical care specialists meets the special medical, emotional and social needs of the sickest children and their families with great compassion and skill. Many patients come to the pediatric intensive care unit via our highly respected Maryland Express Care for Kids, the largest nurse-led pediatric critical care transport team in the state.

- Endocrinology is an internationally recognized division for both its research program and clinical endocrine diagnostic unit. The pediatric diabetes program has joined the Joslin Center for Diabetes at the University of Maryland, a world renowned program in diabetes care.
- The Division of Gastroenterology and Nutrition is a resource for children with hard-to diagnose gastrointestinal problems. This is the country's first center for diagnosis and treatment of celiac disease. The division partners with the Center for Vaccine Development to do research on infectious diarrhea and vaccine development.
- As an affiliate of a major national cancer network, the Division of Hematology/ Oncology affords patients expert information, hard-to-get experimental drugs, and state-of-the-art test and treatment regimens. A team of physicians, nurse clinicians, social workers and child life specialists provides sensitive medical care for children and emotional support for families.
- Through the Division of Human Genetics, genetic, pediatric and obstetric expertise is integrated to provide clinical and laboratory services for diagnosing and managing genetic disorders. We offer comprehensive genetic evaluations, genetic testing, and prenatal diagnosis and counseling.
- Unique in the United States is the Division of Infectious Disease and Tropical Pediatrics. The mission of this division includes ongoing consultation with the Agency for International Development, the World Health Organization and the Pan-American Health Organization. Many of the faculty are also members of the School of Medicine's Center for Vaccine Development.
- The Division of Neonatology provides advanced tertiary care for the smallest and sickest newborns. The state-of-the-art, 40-bed NICU is the largest in the state. The division collaborates with its counterpart at Johns Hopkins Hospital in providing transport of critically ill neonates from community hospitals to a tertiary center for intensive care.
- Within the Division of Nephrology, a multidisciplinary team composed of a physician, social worker, dietitian, child life specialist, teacher and psychologist work together as a team. They strive to help patients with chronic renal disease maintain a lifestyle as similar as possible to that of healthy children.
- Clinical care in the Division of Neurology focuses on developmental disabilities, progressive degenerative disorders and epilepsy. The Pediatric Headache Clinic is one of only two such clinics in the United States.
- The Division of Pediatric Medicine is comprised of a group of academic generalists committed to primary patient care, education and clinical research. The faculty within this division precept the residents for their longitudinal continuity clinic experience. In addition, the Community Practice Program, spearheaded by a member of this division, provides a complementary continuity experience in the community.
- Clinical care for children with asthma via a Breath Mobile, which provides community access to a health care team through intervention programs in 20 schools, forms the cornerstone of the Division of Pulmonary/Allergy. Other areas of expertise include the care of children with chronic lung disease, food allergy, and latex allergy. A research center for the genetics of asthma complements the clinical program.
- The PhD faculty within the Division of Pediatric Research have a primary mission to conduct bench research. These scientists collaborate extensively with clinicians. The focus of this division is to conduct studies in developmental biology with a special emphasis on mental retardation and Sudden Infant Death Syndrome.

In addition to the work in this division, each of the other specialty divisions does research within its own area of expertise. The department ranks among the top 10 of all public university

pediatric departments in federal research grant awards, and the top 20 overall. Grants and contracts total more than $19 million.

- The Pediatric Sleep Disorders Program combines research and therapeutic services for infants at risk for SIDS. For older children at risk for obstructive sleep apnea or narcolepsy, overnight sleep studies are conducted and interpreted.

In addition, a number of faculty in the department are involved in international health. Students and residents interested in taking advantage of an international experience can learn first-hand the interaction and impact of social, economic, cultural and biological factors on health and disease.

Our Community Partner

Mercy Medical Center provides patient care and educational experiences which complement those activities at the University of Maryland Medical Center. A NICU, full-term nursery, general inpatient unit, pediatric clinic and urgent care center provide a wealth of opportunities for residents and students to learn the practice of pediatrics from a community vantage point. Mercy is an affiliate and its staff are members of the faculty at the University of Maryland Medical Center. Here students and residents benefit from their interaction with the practicing community pediatricians.

Graduate Education

The Division of Graduate Education coordinates the graduate residency training programs. In a carefully balanced program of primary care, tertiary care and research, residents are prepared for careers in primary care medicine as well as for competitive fellowship positions. In addition to the training program in categorical pediatrics, training programs in Medicine/Pediatrics and Pediatrics/Emergency Medicine are also available. The combined programs foster interactions with colleagues who have expertise in other disciplines.

A structured, didactic curriculum complements the broad clinical training. Formal teaching conferences as well as informal teaching rounds combine to enhance the educational process. Residents are certified in neonatal and pediatric advanced life support. Programs are fully accredited by the Accreditation Council for Graduate Medical Education.

In addition to the three residency training programs, several fellowships are available. The divisions of Behavior and Development, Critical Care, Endocrinology, Gastroenterology, Infectious Diseases and Neonatology offer accredited fellowships that provide graduates the opportunity to become board-certified subspecialists. Post doctoral fellowships in genetics are available in clinical cytogenetics, clinical molecular genetics and clinical biochemical genetics. Postdoctoral training experience is also available in the Division of Infectious Disease and Tropical Pediatrics.

Undergraduate Medical Education

First Year

Pediatric faculty participate in the Introduction to Clinical Practice Curriculum. During this experience, students begin to learn the art of clinical medicine through patient interviews and observation in various clinical sites. Pediatric faculty also participate as facilitators for the problem-based learning curriculum.

Second Year
During physical diagnosis, students work with pediatricians on campus and in community sites in acquiring the skills necessary to perform a pediatric history and physical examination. The faculty also contribute to the didactic lecture series that ties basic science to the practice of medicine through clinical correlates.

Third Year
Each student spends a total of six weeks in pediatrics. The goal of this experience is to provide students with an exposure to preventive care through child health supervision as well as an exposure to common problems and illnesses. Students learn to provide developmentally appropriate care for the whole child in the context of the family unit. This is accomplished through clinical experiences in primary care clinics and practices, specialty clinics, the pediatric emergency department, nursery and inpatient unit. A specially designed didactic curriculum and case discussion series, with faculty tutors, enhance and solidify the clinical experience.

Fourth Year
A number of exciting opportunities are available for senior students wishing to get a more in-depth experience in pediatrics. One-month acting internships are available on the general ward service as well as in the neonatal and pediatric intensive care units. Ambulatory experiences afford students the opportunity to see a large volume of children with a variety of clinical problems. Elective opportunities are also available in each of the subspecialty divisions outlined above. An elective month in a given subspecialty allows the student to focus on both inpatients and outpatients who are followed by the faculty in that division. A number of faculty within the department function as clinical advisors for students who wish to pursue residency training and ultimately a career in pediatrics. Many faculty members also serve as mentors to students throughout their four years of medical school.

Pharmacology & Experimental Therapeutics
Professor and Chair
Edson X. Albuquerque, MD, PhD

The department's teaching objectives are to provide medical and graduate students with those principles underlying the distribution, metabolism, mechanism of action and toxicity of therapeutic agents or substances. An overriding goal of the medical school teaching program is to convey the fundamental principles of basic and clinical pharmacology and therapeutics through an interdisciplinary teaching effort which brings together faculty from this department and those from other basic science and clinical departments. The faculty of the Department of Pharmacology & Experimental Therapeutics therefore provide substantial leadership and participation in the Pathophysiology and Therapeutics course given during the second year of the medical curriculum. When needed, the department also provides its teaching expertise to other courses of the medical curriculum, such as Host Defenses and Infectious diseases.

Graduate Program
At the graduate level, there are several defined areas of study (tracks): oncopharmacology, neuropharmacology, pharmacological biotechnology, and mechanistic toxicology. All tracks

incorporate: 1) training in modern techniques of pharmacology (molecular biology; receptor biochemistry; cell biology; tissue culture; electrophysiology; protein crystal structure analysis and ligand binding; drug design, synthesis and modeling; etc.); 2) research directed toward the study of new drugs and increasing effectiveness of existing drugs used in treatment of human diseases; and 3) research to better understand actions of drugs and toxins on various organ systems. The department encourages the participation of medical students in graduate research through the MD/PhD Program.

The Pharmacology Graduate Program is undergoing re-organization along with the other graduate programs in the School of Medicine and is found on the web at pharmacology.umaryland.edu. The program offers a broad range of courses including: biochemical pharmacology, developmental neurobiology, endocrine pharmacology, fundamentals of membrane transport, fundamentals of pharmacology, integrative pharmacology, introduction to membranes, ion channels, molecular neuropharmacology, molecular oncopharmacology, muscle cell biology and development, pharmacological biotechnology, and synaptic physiology and pharmacology.

Faculty also offer summer research programs tailored to the research interests of medical and graduate students. Students should consult the graduate program director for further details

Physical Therapy & Rehabilitation Science (PTRS)
Professor and Chair
Mary M. Rodgers, PhD, PT

The School of Medicine (SOM) offers an entry-level professional doctoral degree in Physical Therapy (DPT), two post-professional doctoral degrees in Physical Therapy (transitional DPT, DScPT) and a PhD degree in Physical Rehabilitation Science. As an integral part of the health care delivery team, PTRS students and faculty strive to provide the best possible health care and service to their community and state. To help meet these standards, the department maintains a well-equipped service learning clinic and state-of-the-art, active research laboratories for faculty and students.

In the entry-level DPT program, students complete four years of pre-professional course work including a bachelor's degree prior to beginning their studies on this campus, and three years of professional course work at SOM PTRS leading to the DPT degree.

Clinical education is an essential part of the department's physical therapy program. The department is affiliated with more than 275 clinical facilities throughout the country. Clinical experiences are provided in general acute, rehabilitation, orthopaedic/sports medicine, neurology, pediatric, geriatric, extended care, critical care, home health and community health settings locally and throughout the United States. The clinical education program is divided into four practicum periods totaling 26 weeks of full-time experience. During the clinical practicums, the student has the opportunity to integrate knowledge gained from courses and to expand skills in evaluation, treatment and interpersonal communication.

The PTRS faculty has research interests that are dedicated to understanding physical dysfunction and determining most effective treatment paradigms. The varied backgrounds of faculty members ensure an interdisciplinary approach in research, as well as collaborative projects with other departments. Current projects are related to the general areas of development, aging and response to exercise or electrical stimulation applied to specific clinical populations of wheelchair users, lupus, stroke and HIV disease. DPT students are encouraged to participate in research activities as hourly workers and/or as an elective experience.

The Doctor of Science in Physical Therapy (DScPT) and Transitional Doctor of Physical Therapy (TDPT) programs offer practicing physical therapists the opportunity to pursue a terminal, clinical degree through a combination of distance education and on-site seminars. These programs allow students to maintain their clinical practice and personal responsibilities while learning through an Internet-based curriculum. The DScPT program is tailored to those physical therapists with years of experience and a desire to advance in an area of practice such as orthopedics, education, or management. The TDPT program permits physical therapists to update their credentials to the doctoral level that is obtained by students in the entry-level program.

The PhD in Physical Rehabilitation Science is an interdisciplinary program requiring 4 to 5 years study and research. Students come from a range of relevant backgrounds and take a minimum of 60 credits past their Bachelor's degree. They choose an area of concentration from the following areas: Epidemiology, Neuromotor Control, Rehabilitation Biomechanics and Rehabilitation Physiology. The credits consist of 10 in rehabilitation science core, 12 in tools and measurement, 4 in an interdisciplinary seminar, 22 in a concentration or cognate area and 12 for the dissertation. Students are expected to be involved in research (including grant writing and publication) from the start of their program, and typically take their competency exams between the 2nd and 3rd years. Graduates of this relatively new program have found excellent post-doctoral positions.

For additional information contact:

Sandy McCombe Waller, PT, PhD, NCS
Director of Entry-level Physical Therapy Program

Fran Huber PT, Med, OCS
Director of Doctor of Science in Physical Therapy Program

Jill Whitall, PhD
Director of PhD in Physical Rehabilitation Science Program

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Physiology
Professor and Chair
Meredith Bond, PhD

The Department of Physiology provides lecture, laboratory and seminar coursework in the principles of human physiology for medical students and graduate students. Also offered are advanced courses in specialized areas of physiology for graduate students, fellows and interested medical students (see Graduate School catalog).

Research Interests
The faculty of the Department of Physiology are dedicated to elucidating fundamental new information about the mechanisms that underlie physiological processes. Many of the department's research programs focus on four general areas: cell and membrane physiology, neurobiology, reproductive biology and endocrinology, cardiovascular physiology and renal physiology. The research programs encompass a number of topics with direct clinical relevance, including projects related to cardiac arrhythmias, congestive heart failure, reproduction and contraception, diabetes, cancer, epilepsy and hypertension. Medical students are encouraged to participate in research activities during summer and other elective periods. Opportunities for combined MD/PhD training are also available.

Undergraduate Medical Program
First and Second Years
The Department of Physiology is a major participant in the freshman curriculum with faculty teaching primarily in Functional Systems (Block IV) and Neurosciences (Block V) in the first year.

Other opportunities: A number of elective courses, advanced seminars and research in special areas of physiology are open to interested students during the independent study or senior elective period or other free time. A combined MD/PhD program requiring additional coursework and original research is offered for highly qualified medical students. (See Graduate School catalog for additional advanced courses.)

Fourth Year
MPHY 542: Seminars in Physiology Elective. Advanced seminars in selected fields of physiology (e.g. cardiovascular, renal, endocrine and neural) are offered by arrangement with faculty each semester.

MPHY 548: Research Elective in Physiology in Selected Fields. Students may elect to carry out independent research programs in faculty laboratories.

Psychiatry
Professor and Chair
Anthony F. Lehman, MD, MSPH

The goal of undergraduate psychiatric education is to assist students in acquiring an understanding of and an appreciation for the application of behavioral and psychiatric principles in patient care and health maintenance through an exposure to a progressive sequence of intellectual stimulations, clinical experiences and appropriate professional socialization within the interdisciplinary framework of the new curriculum. More specifically, the curriculum aims to assist the student in: 1) acquiring a foundation of knowledge regarding the biological, psychological, sociological and humanistic aspects of the practice of medicine; 2) mastering basic interpersonal and psychiatric skills relevant to the management of patients with medical and/or emotional illness; and 3) emulating attitudes and values that enhance the professional roles and practices of a physician.

Undergraduate Medical Program

First Year (Psychiatry faculty teach in Blocks II, V and VI of the freshman curriculum.)
Human Behavior. The Department of Psychiatry takes the lead in teaching the Human Behavior block which integrates information about human behavior from the biological, behavioral and social sciences as it applies to health, illness and treatment across the life span in our multicultural environment. The block introduces the important biopsychosocial framework, stressing the interacting influences of neurobiological, psychological and sociocultural factors on human behavior, illness and physician-patient interactions. The block is made up of lectures, small group sessions, demonstration/discussion periods and problem-based learning (PBL) groups. Psychiatry faculty contributes heavily to instruction and also serves as small group leaders in the Introduction to Clinical Practice Course.

Second Year

Psychopathology. This area of study is now taught as part of the neuroscience module of the Pathophysiology and Therapeutics course in the second year and through additional interdisciplinary teaching in other relevant systems (e.g., cardiovascular, endocrine, etc.) within the new curriculum. The module is designed to provide students with the basic concepts of pathophysiological and therapeutic interventions relevant to the neurosciences. This contains the core areas of clinical psychiatry, including psychopathology and the psychiatric treatment of mental disorders. The module seeks to foster an integrative approach to teaching by combining the knowledge and skills of faculty from the departments of Psychiatry, Neurology, Pharmacology, Pathology, Epidemiology & Preventive Medicine, Neurosurgery and Anesthesiology. The course format is based on lectures, audiovisual demonstrations (videotapes, live simulcast clinical interviews) small group discussions, problem-solving sessions and assigned readings for self-study.

Psychiatric Interviewing/Mental Status Examination. This component is part of the second-year Introduction to Clinical Practice (ICP) course which is devoted to specialty physical diagnosis

and examination. The psychiatric course is devoted to psychiatric interviewing, history taking and the mental status examination. A general introductory lecture is followed by a series of two four-hour small groups sessions where each student performs a live psychiatric interview, observes fellow students performing interviews, and reviews interviewing techniques and psychopathologic concepts with the small group preceptor. Attempts are made to expose the students to patients with psychotic, affective and addictive disorders in their small groups of four to five students.

Third Year

The required clerkship in psychiatry provides the main clinical experience in psychiatry for University of Maryland medical students. The psychiatry clerkship is now offered in a required four-week experience in the junior year. This course continues to provide the junior student with a core clinical psychiatric experience with additional seminars, small groups and case conferences

The core four-week psychiatry experience involves a primary assignment on an acute inpatient unit for the majority of students and for a minority of students it involves 2 two-week assignments to our two hospital based psychiatric consultation services. Comprehensive diagnostic assessments are coupled to treatments invoking pharmacological, psychotherapeutic, biological and psychosocial modalities. Integrating the student into a multidisciplinary treatment team is stressed. In addition, emphasis is placed on the application of a mental status examination for each patient that you will encounter.

You will work under the preceptorship of a psychiatry attending and resident while assigned to the inpatient units. Four hospitals are utilized for these assignments. They are the University of Maryland Medical Center (UMMS), the Baltimore VA Medical Center (BVA), the Walter P. Carter Center (WPCC) and the Spring Grove Hospital Center (SGHC). Students are assigned approximately three to four patients from the inpatient team and serve as their primary medical manager under the direct supervision of the attending and resident psychiatrists. This responsibility and involvement with patients provides an ideal setting in which the student may apply the biopsychosocial concepts learned in the first year human behavior course to the specific knowledge of psychopatholgy and therapeutic interventions presented in the sophomore pathophysiology and therapeutics course. A goal of the clerkship is to integrate this knowledge with the acquired skills of psychiatric interviewing, medical history taking and physical diagnosis acquired in the Introduction to Clinical Practice courses. As a student, you will assume an integral role on the multidisciplinary treatment team and in the ward milieu.

Those students assigned to the consultation services are given an opportunity to see patients in a general hospital setting where other physicians have requested psychiatric consultation. Both of these services are offered at UMMS and are divided into a general psychiatry and an addiction psychiatry consultation service.

In addition to the clinical assignments, students are given a limited seminar series. These seminars occur throughout the four-week course on Thursdays from 8:30am-12 noon. The scope of the morning seminars (8:30-10:15am) includes child psychiatry and addiction psychiatry.

However, other pertinent areas of psychopathology and psychopharmacology will be covered in a series of seminars with Dr. Perez-Madrinan following the initial 2 hour seminar(10:30-12:00). It should be noted that in a four week clerkship not all areas of psychiatry can be covered for which you will ultimately be responsible for on the USMLE examination. A more comprehensive study guide with specific goals and objectives is provided within the orientation packet to assist the student into expanding the breadth of material that might appear on the shelf exam. In addition, a clinical case conference is given weekly with a focus on interviewing, diagnostic assessment and treatment skills with a variety of faculty.

Additional responsibilities include in-house call responsibilities; attendance at a community based 12-step program (e.g., AA or NA) and the opportunity to observe electroconvulsive therapy. Each inpatient unit also has weekly administrative law hearings for involuntary civil commitments of persons suffering from severe mental illnesses that pose a danger to themselves and/or others and refuse a voluntary admission.

Electives

The Department of Psychiatry offers elective courses in all four years of the medical school curriculum. Elective courses offered in the senior year are numerous and include in-depth psychiatric experiences in: inpatient, community psychiatry, emergency psychiatry, forensic psychiatry, child psychiatry, geriatric psychiatry, substance abuse, consultation/liaison psychiatry and research electives.

Combined Accelerated Program in Psychiatry–CAPP Program. This longitudinal elective track has become nationally visible for its success in engaging students in psychiatry through an advanced three-year curriculum that begins in the freshman year. The program has continued to admit 12 freshman students each year. From early in the freshman year, the track provides an unfolding progression of combined small group seminars and clinical experiences in the behavioral sciences and clinical psychiatry. Students have seminars in advanced psychiatric interviewing, psychopathology, child psychiatry and a variety of psychotherapy modalities. In addition, an 8 week summer externship in clinical psychiatry is offered in the summer following the freshman year and a clinical mentorship (which can involve a longitudinal faculty supervised psychotherapy patient) is offered as part of the sophomore year.

Radiation Oncology
Professor and Chair
William F. Regine, MD

Radiation oncology is a specialty devoted to the treatment of benign and malignant tumors. Sixty to 70 percent of all cancer patients will at some point during their disease need or be eligible for radiation therapy. Fifty percent of all patients being treated in the department are being treated for a cure. Nearly 40 percent of those treated for cure are treated by a multimodality approach. Approximately 30 percent of patients treated for a cure are being treated with radiation therapy as a sole method of treatment and as the method of choice to achieve a cure.

Cancer is a complex disease. The modern and also the best approach to treating this disease is multi-modality therapy. Evidence suggests that this approach to cancer offers a patient the greatest chance of survival. This requires a multi-disciplinary approach to the evaluation and treatment. Emphasis is placed on the principles of radiation oncology, radiation biology, and radiation physics. The student will be taught to value the importance of the combined modality approach through lectures, actual case presentation, demonstrations and participation in new patient and follow-up clinics. The student uniquely will receive experience in the examination and diagnosis of physical findings associated with the pathology of malignant diseases. There will be teaching in the area of tumor pathology, biology, and behavior. The student will be made aware of the role of radiation oncology and the indications for its use in the management of patients with cancer.

Research Interests
Department research efforts are focused upon many areas of oncology. The use of radiation as a systemic treatment agent, brachytherapy, , neuro-oncology, conformal therapy, 3-D treatment planning, CT simulation, microcirculation of tumors, tumor microenvironment, molecular oncobiology, gamma knife and extracranial stereotactic radiosurgery, and fractionation schemes represent several departmental research interests. These activities are conducted in the clinical and basic science environments.

Undergraduate Medical Program
Fourth Year
Elective in Radiation Therapy. Students interested in oncology are offered an opportunity to participate as members of the radiation oncology team. They become familiar with the evaluation, management and follow-up of cancer patients. Included are treatment planning, dosimetry, the use of interstitial and intracavitary sources of radionuclides, remote afterloader and stereotactic radiotherapy.

Graduate Program
An approved four-year residency program in Radiation Oncology is offered at the University of Maryland Medical System. Teaching is carried out through didactic lectures, clinics and numerous teaching conferences, clinical and basic research, with emphasis on patient care, under the supervision of full-time staff. Elective time is spent in related oncological specialties to promote the multidisciplinary concept of managing cancer patients. The department has state-of-the-art equipment and operates several sites both on and off- campus, which include: the University Physicians Professional Building, a main facility in the Gudelsky Tower of the University of Maryland Medical Center, and the Central Maryland Oncology Center in Columbia, MD and the Helen P. Denit Center for Radiation Therapy in Olney, MD.

Surgery
Barbara Baur Dunlap Professor and Chair
Steven T. Bartlett, MD

The Department of Surgery is organized into 11 divisions: Cardiac Surgery, Emergency Medicine, General Surgery, Plastic and Reconstructive Surgery, Surgical Oncology, Pediatric Surgery, Thoracic Surgery, Transplantation, Urology, and Vascular Surgery. Many faculty

members participate in the teaching of anatomy, pathology and physiology, and almost all participate in formal courses offered during the clinical years. During the junior year, all students must complete the eight-week clinical clerkship in surgery. Four weeks are spent in general surgery, two weeks in Shock Trauma, and two weeks in surgical specialties of vascular, transplant, CT and pediatric surgery. The general surgical clinical rotations are based at the University of Maryland Medical Center, Mercy Medical Center and the Baltimore Veterans Affairs Medical Center. The four-week subspecialty rotation will consist of one week in urology, orthopaedics, otolaryngology and anesthetic management emphasizing airway management.

Electives in surgical research and summer fellowships are available to students in all four years. More extensive clinical experience with greater patient responsibility is offered by all divisions as subinternships and electives during the fourth year.

The surgical clerkship exposes the student to disease entities that can or should be treated by operative intervention and to the physiologic and metabolic consequences of such intervention. Students learn to recognize conditions that will require surgical consultation. They gain an appreciation of wound care as well as familiarity with basic emergency procedures. This course of study enables the future family practitioner, internist, pediatrician or psychiatrist to discuss probable treatment and prognosis of various surgical diseases with their patients. Further, students are given the opportunity to explore various surgical disciplines and to participate fully in the daily activities of the surgical teams.

Graduates of approved medical schools may be considered for residencies in General Surgery, Emergency Medicine, Neurological Surgery, Otolaryngology-Head and Neck Surgery, Pediatric Surgery, Plastic and Reconstructive Surgery, Surgical Critical Care, Thoracic and Cardiovascular Surgery and Urology.

Division of Emergency Medicine
Professor and Chief
Brian J. Browne, MD

Undergraduate Medical Program
Third Year
During the third year, students are able to evaluate patients in the emergency room setting as part of the various surgical teams to which they are assigned during the basic surgical clerkship. They begin to establish priorities for expedient formulation of differential diagnoses and prompt intervention.

Fourth Year
The Division of Emergency Medicine offers a one-month elective during the senior year. Under direct supervision, the student functions as an intern, evaluating the patient by means of a complete history and physical examination and appropriate laboratory studies. Faculty offer monthly anatomic laboratories during which students learn minor procedures and suturing techniques. Didactic sessions include lectures and teaching rounds. Each student spends one shift riding an ambulance with Baltimore City paramedics.

Graduate Studies
The University of Maryland offers an accredited three-year residency program in emergency medicine. Residents rotate through Mercy Hospital, the R Adams Cowley Shock Trauma Center, as well as the University of Maryland Medical Center, which is the principal teaching facility for the program.

Division of General Surgery
Adrian E. Park, MD, FRCS(C), FACS
Campbell and Jeanette Plugge Professor of Surgery
Chief, Division of General Surgery

Undergraduate Medical Program
First Year
Faculty members of the Department of Surgery participate in the Structure and Development, Neurosciences, and Functional Systems blocks of the first year of the undergraduate curriculum.

Third Year
Students are divided into groups for continuous assignment to individual patient services. Selected patients are assigned to individual students who are expected to record a complete history, the results of a physical examination and required laboratory studies. The differential diagnosis, final diagnosis and recommendations for therapy must be developed. Operating room participation, supervised direct patient care and attendance at outpatient clinics are required as part of the emphasis on continuity of patient responsibility. The program is designed to provide the student with a broad overview of the fundamentals of the discipline in the clinical environment by emphasizing contact with a wide variety of adult and pediatric patients. Clinical problems encountered usually include surgical infections, neoplasms, trauma, endocrine disorders, vascular disease, gastrointestinal problems, metabolic disorders and congenital defects.

The student is responsible for a core curriculum of surgical knowledge. Emphasis throughout the course is placed on problem solving through correlation of basic science information with clinical diagnosis and management. Didactic instruction is provided through lectures, small discussion groups, clinical conferences and grand rounds. Final evaluation is based upon clinical performance and a comprehensive examination.

Fourth Year
The Department of Surgery offers four-week subinternships in general surgery at University of Maryland Medical Center and the Baltimore Veterans Affairs and Mercy Medical Centers for those students interested in a career in surgery or seeking to expand their knowledge of surgical science. Various clinical electives in general surgery are offered at the University of Maryland Medical System, Mercy Medical Center and York Hospital. Electives include general surgery, trauma surgery, vascular surgery, transplantation surgery and surgical intensive care.

Senior students are expected to be an integral part of the surgical team. Under supervision, they assume responsibility for initial patient evaluation in the clinics and emergency

room, participate in pre- and post-operative care, attend the operating room, participate in clinical conferences and take night call.

Graduate Programs
A fully accredited residency in general surgery is based at the University of Maryland Medical System, incorporating important clinical experience at Mercy Medical Center and the Baltimore Veterans Affairs Medical Center. The program offers five years of clinical experience with graded responsibility and one year of basic investigation. Additionally, a fellowship in surgical endoscopy and laparoscopic surgery is available.

Division of Pediatric Surgery
Roger Voigt MD
Professor and Head, Division of Pediatric Surgery

Undergraduate Medical Program
Third Year
The Division of Surgical Services for Infants and Children aims to provide students with a perspective on the unique problems encountered by families, physicians and nurses when caring for patients with pediatric surgical illness, to teach management of these often complex problems and to introduce the delicate surgical techniques developed especially for young patients.
As part of the basic surgical clerkship, students may elect to spend three weeks with the pediatric surgical team. Each is assigned patients to evaluate preoperatively, to accompany to the operating room and to help manage during the postoperative period. Emphasis is placed on differential diagnosis, embryology, anatomy and developmental pathophysiology. Patients range in age from prematurity to adolescence. Exposure to the nursery, pediatric emergency room and intensive care units is an integral part of the experience. Didactic instruction is provided in the operating room, during teaching rounds, by case presentations and in conferences.

Fourth Year
During the senior year, students may choose a one-month elective on the pediatric surgery service functioning, under supervision, as a subintern.

Graduate Studies
The University of Maryland Baltimore-Johns Hopkins University integrated training program in pediatric surgery offers an accredited two-year residency. The program requires board eligibility in general surgery with candidates applying during the fourth or fifth year of general surgery training. This residency participates in a match program with 33 centers in the United States and Canada.

Division of Plastic and Reconstructive Surgery
Professor and Chief
Nelson H. Goldberg, MD

Undergraduate Medical Program
As part of the basic surgical subspeciality clerkship, students may elect a rotation on the plastic surgery service at the University of Maryland Medical Center. Emphasis is placed on learning

the principles of wound healing, wound care and reconstruction of post-traumatic or ablative defects. Students are also introduced to the treatment of congenital abnormalities and cosmetic problems in both the inpatient and ambulatory environments. Daily teaching rounds provide students with an opportunity to participate in case presentations. Students accompany patients to the operating room and attend all teaching conferences.

A one-month elective is available to senior students interested in plastic and reconstructive surgery. Under supervision, the student functions as a subintern taking responsibility for pre- and post-operative care of selected patients.

Graduate Studies
The University of Maryland Baltimore and Johns Hopkins University offer a combined three-year residency program in plastic and reconstructive surgery. Each year, three residents enter this fully accredited residency training program and, upon completion, are eligible for examination by the American Board of Plastic and Reconstructive Surgery. Training takes place at the University of Maryland Medical Center, the Johns Hopkins Hospital, the R Adams Cowley Shock Trauma Center, Bayview Medical Center, Union Memorial Hospital, and the Baltimore Veterans Affairs Medical Center.

Division of Thoracic and Cardiovascular Surgery
Bartley P. Griffith, MD
Professor and Head

Undergraduate Medical Program
Third Year
The basic surgical clerkship includes a rotation on the cardiothoracic service. Students participate, along with the resident staff, in all service activities, patient care responsibilities and teaching conferences.

Fourth Year
The goal of the one-month senior elective in cardiothoracic surgery is to present, in a clinical setting, the basic pathophysiologic principles of thoracic and cardiovascular surgery. The student becomes an integral member of the patient care team and, under supervision, participates in the capacity of an intern. Emphasis is placed on diagnosis and management of the patient with surgical heart disease.

Graduate Studies
The three-year residency program is accredited by the Residency Review Committee of Thoracic Surgery. Applicants must be eligible for the American Board of Surgery examination on admission to the program. Residents are given an opportunity to assist and then perform all types of cardiothoracic operative procedures, with a particular emphasis on adult cardiac and general thoracic surgery.

Division of Transplantation
Benjamin Philosophe MD, PhD
Associate Professor and Head

Undergraduate Program
Third Year
The basic surgical clerkship includes a rotation on the abdominal transplant service. Students participate, along with the resident staff, in all service activities, patient care responsibilities and teaching conferences.

Fourth Year
The goal of the one-month senior elective in transplant surgery is to understand and assist in the management of patients with renal, pancreas and hepatic transplants. This includes the basic understanding of immunosuppression, clinical immunology, the technical aspects of each procedure, organ donation and removal and complications of transplantation. The students are exposed to a large volume of patients and intense clinical service.

Graduate Program
An accredited fellowship program in transplantation surgery is available to candidates who have completed residency training in general surgery. This one-year program is based at the University of Maryland Medical Center. Fellows may elect to spend an additional year devoted to clinical research.

Division of Urology
Jeffery Sklar, MD
Associate Professor and Head

Undergraduate Medical Program
The curriculum is designed to introduce urologic principles as they relate to preservation of health through maximum renal function, normal urine storage and transport, an acceptable voiding pattern, treatment and prevention of urinary infection, identification and management of neoplasms of the urinary tract and male reproductive system and management of urolithiasis. Instruction is also given on disorders of the male reproductive tract including infertility and disturbance in sexual function.

During the surgical subspecialties clerkship, students can elect a specialty rotation on the urologic service at either the University of Maryland Medical Centerl or the Harbor Hospital Center. Each student is assigned patients to evaluate, follow and present to members of the faculty. Daily rounds and conferences are held. The students observe and participate in diagnostic and operative procedures and attend the outpatient clinic.

Senior students may participate in a one-month elective in urology at the University of Maryland Medical System.

Graduate Studies
The residency program consists of five years of urologic training following two prerequisite years of general surgery. In addition to four years of clinical training, one year is devoted to basic investigation in the laboratories of the division.

Division of Vascular Surgery
William R. Flinn, MD
Professor and Head

Undergraduate Medical Program
Third Year
Vascular surgery is one of the core components of general surgery, and third-year medical students rotate on the Vascular Surgery Service for periods of two-to-four weeks. Students are specifically instructed on the performance of a thorough vascular examination, including the detection of carotid artery disease, aneurysm disease, and extremity arterial occlusive disease. They are instructed in the application of non-invasive vascular testing, including the bedside Doppler examination, as well as more sophisticated duplex ultrasound scan diagnosis. During their operating room experience, students assist in performing of major vascular reconstructive surgical procedures.

Fourth Year
Fourth-year medical students may elect a one-month rotation on the Vascular Surgery Service. During this time they are given responsibility for initial patient evaluation and assist in the planning of diagnostic evaluation and therapeutic management. Students are given advanced instruction in the performance and interpretation of noninvasive vascular testing, as well as evaluation of diagnostic arteriograms. Senior students have increasing responsibility in the operating room to help develop their technical skills. Students are also encouraged to participate in ongoing clinical research.

Graduate Studies
The Division of Vascular Surgery offers a fully accredited two-year residency position in General Vascular Surgery. The first year of this program includes experience in the Vascular Research Laboratory participating in ongoing primary research. The first year of the program also includes dedicated experience in the Non-invasive Vascular Laboratory, where the trainee will acquire skills in the performance and interpretation of all forms of non-invasive diagnostic testing. This preliminary year also includes experience in performing endovascular therapies. The second year of training is the clinical year, which is shared between the University of Maryland Medical Center and the Baltimore Veterans Administration Medical Center. The trainee serves as the supervisory resident on the Vascular Surgery Service, and is involved in the diagnostic evaluation, therapeutic decision making, and performance of vascular surgical procedures.

Programs

Program in Comparative Medicine

Director: Louis J. DeTolla Jr., VMD, PhD
Associate Professor, Departments of Pathology and Medicine

The Program in Comparative Medicine, established in 1989, studies the characterization of animal models of human disease for biomedical research and the use of such models to advance understanding of disease or biological processes. Comparative Medicine contributes to the School of Medicine by providing accredited services for laboratory animal care through Veterinary Resources, collaborative research, professional development of veterinary physicians and staff, formal training of veterinarians in residence, and a resource for information and instruction on the use of laboratory animals in research.

A three-year, full-time specialty training program in laboratory animal medicine is offered to prepare residents for board certification in the American College of Laboratory Animal Medicine (ACLAM). Applicants must have the DVM degree or equivalent from an accredited school of veterinary medicine, three years of full-time clinical practice experience, demonstrated interest/experience in laboratory animal species and research aptitude/experience. The program trains veterinarians in clinical laboratory animal medicine, surgery, pathology, laboratory diagnostics, husbandry, administration, legal aspects of animal care and use, and biomedical research, and includes assignment to clinical and laboratory rotations, coursework, seminars and contributions to scientific meetings. Research endeavors include vaccine development, transgenic animal production, infectious diseases, gene therapy, diagnostics and medical primatology.

The program also provides veterinary medical services to the Dental School, the School of Pharmacy, the University of Maryland Baltimore County and the Baltimore Veterans Affairs Medical Center. In addition, there are active working relationships with the Baltimore Zoo, the Comparative Medicine Division of Johns Hopkins University School of Medicine, Towson University and the Gerontology Research Center of the National Institute on Aging. The director serves as a member of the Animal Policy Committee of the National Aquarium in Baltimore and directs an externship program for senior veterinary students of the Virginia/Maryland Regional School of Veterinary Medicine. The director also serves as director of the University of Maryland Baltimore Veterinary Resources and is currently the principal investigator for the non-human primate core of The Mid-Atlantic Regional Center for Excellence (RCE) for Biodefense and Emerging Infectious Diseases, which is funded by the National Institute for Allergy and Infectious Diseases (NIAID). Faculty have primary academic appointments in various clinical and basic science departments and secondary appointments in Comparative Medicine.

Program in Complementary Medicine
Director: Brian M. Berman, MD
Professor, Department of Family Medicine

The mission of the Program in Complementary Medicine is to evaluate the scientific foundation and efficacy of complementary/alternative medicine and explore its integration into mainstream medicine through an evidence-based framework. Designated as a program within the School of Medicine in 1997, the unit was started in 1991 and was formerly a division within the Department of Family Medicine. The program has been continuously involved in four overlapping spheres of activity: research, education, database and literature evaluation and clinical care. Over the past three years the program has also been home to a National Institutes of Health center grant for research in complementary medicine and pain.

The research activities of the program include: a) basic science investigations of the mechanism of action of complementary therapies, b) investigation of the efficacy, safety and cost effectiveness of complementary therapies, with special interest in dysfunction or illness from chronic pain and stress, using randomized control trials, clinical trials and outcome study designs, and c) surveys of the attitudes and clinical behaviors of various physician groups toward complementary therapies, which has significant implications for consumer options. In an effort to collect and evaluate the existing literature in complementary medicine and pain, the program has developed a database called CAMPAIN of all relevant citations in this area, and team members are involved with systematic reviews and meta-analyses. In addition, the program serves as the coordinating center for the complementary medicine field of the Cochrane Collaboration, an international effort to systematically review and update medical therapies. The faculty of the program is strongly committed to collaboration on scientific research within our own institution and with institutions nationally and abroad.

The program also provides an integrative medical clinic where patients are offered a broad range of treatment options that include conventional and complementary treatments. Complementary therapies included at the clinic range from traditional Chinese medicine and acupuncture, to homeopathy and mind/body therapies. The diagnoses seen in the clinic are primarily pain-related and include arthritis, fibromyalgia, headaches, chronic back and neck pain, with a smaller amount of cancer-related and neurologic pain. Clinical service contacts are tacked longitudinally to provide regular feedback to practitioners of treatment plan outcomes and to provide preliminary data for more formalized research protocols such as clinical trials.

The purpose of our education program is to increase the medical profession's knowledge of complementary medicine and review the safety and efficacy of various complementary therapies. Educational initiatives include a fourth-year medical school survey course, Introduction to Complementary Medicine, offered as an elective. In addition, complementary medicine lectures are offered as part of the required third-year family medicine core residents' training, bringing in experts in complementary medicine from across the country. A visiting professor series was introduced in 2000 and aims to build links with clinicians and researchers in other countries.

Program in Human Genetics
Director: Alan R. Shuldiner, MD
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The unveiling of the complete sequence of the human genome is providing exciting new insights into human biology and disease. Coupled with advances occurring in areas such as high throughput technologies and computing, exceptional opportunities now exist to uncover the molecular bases of many medical conditions, from rare monogenic diseases to common diseases of complex inheritance - discoveries that will translate into exciting new strategies for prevention and treatment. The Program in Human Genetics and Genomic Medicine is an inter-departmental program that emphasizes a multidisciplinary team approach to research training and discovery. Faculty have expertise across a wide range of disciplines including clinical investigation, molecular genetics, cytogenetics, cancer genetics, biochemical genetics, functional genomics, molecular and cell biology, genetic epidemiology, statistical genetics, and bioinformatics. The Program offers opportunities for students at all stages including undergraduate, graduate, and post-graduate. The graduate program grants both master's and doctoral level degrees. In addition, there is a nationally accredited master's in genetic counseling training program. Positions are also available for post-doctoral fellows in genetics/genomics as well as MD fellows.

Program in Neuroscience
Director: Michael T. Shipley, PhD
Professor and Chairman, Department of Anatomy & Neurobiology

The University of Maryland Baltimore offers an inter-disciplinary program of study leading to a PhD degree in neuroscience. The program offers research training in a wide range of brain sciences, including cellular, molecular and integrative neuroscience. Research training programs investigate a wide range of issues, at levels ranging from ion channels and single cells to complex subsystems of the mammalian brain and regulation of behavior. These include studies focusing on Biological Mechanisms of Learning & Memory, Synaptic Physiology & Plasticity, Developmental Neurobiology, Pain Mechanisms, Neuroprotection & Brain Injury, Mechanisms of Dementia and Psychiatric Disorders, Brain and Reproductive Function, Genetic Basic of Brain Functions, Taste and Smell, Drug Discovery, Neuromuscular Functions & Disorders.

There are over 80 faculty members in the Program in Neuroscience. These faculty members are widely recognized as experts in neuroscience research and the treatment of neurological disorders. They function in state-of-the-art research and clinical facilities. In addition, they compete successfully for high levels of national grant funding. Faculty members have numerous collaborative teaching and supervisory interactions, which provide cohesiveness to the program and abundant opportunities for students, residents and fellows to obtain experience in interdisciplinary neuroscience studies. With over 35,000 square feet of space in

laboratories of the participating faculty and more than 4,000 square feet of common equipment rooms, the Program in Neuroscience facilities include all the basic equipment needed for electrophysiological, optical, ultrastructural, immunological and molecular neurobiological studies.

Program faculty employ a wide variety of state-of-the-art techniques. At the molecular level investigators study the structure, function and membrane organization of ion channels and neurotransmitter receptors. Using in vitro techniques (e.g., tissue culture and brain slices), investigators study intrinsic cellular properties as well as interactions between cells in simple cell assemblies or systems with various techniques: electrophysiology (patch clamp, single channel, intracellular), functional imaging (calcium imaging, voltage-sensitive dyes), cell biology ("caged" compounds, confocal microscopy, immunocytochemistry, histochemistry), and molecular biology (DNA cloning, gene transcription, oocyte expression and transgenic mice). Neurochemical methods are used to investigate the activation of neurotransmitter receptors, second messenger production and the sequelae of these processes. Sensory systems (vision,. audition, olfaction, pain, touch and taste) are studied with electrophysiological, behavioral and neuroanatomical techniques. At complex organizational levels, investigators study hormonal control of gene expression in the regulation of sexually dimorphic behaviors, neuronal cell death and the neurobiological basis of psychiatric illnesses. Behavioral and imaging (fMRI) studies in humans address the neurobiology of speech and language disorders, and pain mechanisms.

The inter-departmental Program in Neuroscience has laboratories located in the Medical, Dental and Pharmacy Schools, and the Maryland Psychiatric Research Center. Program faculty have numerous collaborations, which provide abundant opportunities for students to obtain experience in interdisciplinary neuroscience studies.

PROGRAM OF STUDY

The graduate curriculum is tailored to meet each student's research interests and career goals. The training program stresses hands-on experience in a wide variety of state-of-the art approaches and techniques. This experience is gained through a series of rotations in different laboratories, to gain familiarity with various techniques and scientific environments.

All students complete a one-semester "Introduction to Neuroscience" course and a course in biostatistics. The program offers a wide variety of advanced courses, covering all areas of modern neuroscience research. In addition, students participate in journal clubs and seminars. First-year students also attend Professor's Rounds in Neuroscience, an informal series of talks by faculty designed to introduce the faculty and their research interests. The program offers a variety of activities designed to advance students' career development, including courses on writing grant applications and scientific papers, communication skills, and instruction on employment opportunities in academia, industry and science policy and administration.

Laboratory rotations and coursework are completed by the end of the second year in the program, at which point the student will have selected a faculty mentor and dissertation laboratory. Successful completion of a qualifying exam at the end of the second year enables the student to advance to candidacy for the PhD degree. As a PhD candidate, the student's primary focus is on research, with continued attendance at journal clubs and seminars.

FINANCIAL ASSISTANCE
Students accepted into the program receive financial support from NIH-funded training grants and from University of Maryland Baltimore sources. Stipend amounts for 1999-2000 were $16,000 - $18,000, plus tuition remission and student health insurance. Financial support is available for the duration of time required to complete the PhD, which typically takes four to six years. There are currently no teaching requirements for graduate students, although teaching opportunities are available for qualified, interested students.

HOW TO APPLY
Successful applicants have a bachelor's degree with training in an appropriate major field, strong letters of recommendation and high GPAs and GRE scores. International students must take the Test of English as a Foreign Language (TOEFL) exam. Although applications are reviewed throughout the year, students are encouraged to apply early. Admission to the program is highly competitive, and acceptances are made as qualified candidates are identified.

Application forms can be obtained by contacting the program administrator via e-mail at neurosci@umaryland.edu. Alternatively, you can fill out the on-line inquiry form (http://neuroscience.umaryland.edu/inquiry_form.htm) and we will send you an application, or you can go directly to the official graduate admission form (http://www.acaff.usmh.usmd.edu/gradapp/) and fill out an on-line application.

Program in Oncology
Director: Kevin J. Cullen, MD
Professor, Department of Medicine

Within the School of Medicine and the other UMB schools, the program in Oncology and the University of Maryland Greenebaum Cancer Center serve to facilitate cancer-related activities on campus. The Program in Oncology is the academic core of the Cancer Center and is based in the School of Medicine. Faculty members of the program recognize a level of excellence in, and dedication to, cancer-related teaching, research, patient care and community outreach activities. The Program in Oncology members have academic appointments in various clinical and basic science departments of the School of Medicine and other UMB schools, such as Pharmacy, Dentistry, Social Work and Nursing. Activities of the Program in Oncology include basic and translational cancer research, student and house officer teaching and a strong focus on new therapies in both an inpatient 40-bed unit and outpatient setting. In addition to full-time attending services on medical oncology and hematology, Cancer Center members participate in multidisciplinary clinical programs centered around specific cancers (e.g. breast, thoracic, genitourinary, gynecologic, head and neck, gastroenterologic and hematologic malignancies) with specialists from surgical and radiation oncology to provide integrated care for the cancer patient.

The University of Maryland Greenebaum Cancer Center has substantial NCI/NIH funding and is one of only six National Cancer Institute planning centers. The Cancer Center is a strong participant in new drug development and trials, and is one of only a few cancer centers with an NCI Phase I Clinical Trials grant. Virtually every important drug in use in oncology

today has been tested in this program. The Cancer Center has also established strong programs in Molecular and Structural Biology, Viral Carcinogenesis, Aerodigestive Cancers, Breast Cancer, Prostate Cancer, and Cancer Prevention and Control. The members have a strong commitment to intra- and inter-institutional cooperative cancer research.

Students and residents participate in weekly grand rounds and conferences, and students are encouraged to become involved in research projects with Program in Oncology members. Fellows at the Cancer Center work closely with senior faculty physicians and benefit from a comprehensive training and research environment. The Fellowship Program is a joint activity of the Cancer Center and the Division of Hematology/Oncology of the Department of Medicine at the University of Maryland School of Medicine. During the program, fellows receive intensive clinical training in a wide range of malignancies and support for independent, clinical and basic research projects.

Program in Trauma
Director: Thomas M. Scalea, MD
Professor, Department of Surgery

The Program in Trauma is organized as a multidisciplinary clinical, educational and research component within the School of Medicine. The program's core service includes general surgery, critical care, orthopaedics, plastic surgery, anesthesia, infectious disease and hyperbaric medicine. The R Adams Cowley Shock Trauma Center is defined in Maryland law as the "core component of the state's emergency medical system and shall continue to serve as the state's primary adult trauma clinical resource center" for Maryland's comprehensive system of emergency services. The center is designated by Maryland Institute for Emergency Medical Services Systems (MIEMSS) as the Primary Adult Resource Center (PARC) for trauma and also serves as the designated Neurotrauma Center. Shock Trauma is a statewide referral site for patients with multisystem injury, acute complex orthopaedic injury, spinal cord and column injuries, brain injury, hyperbaric medicine therapy, and patients who are at risk for multiple organ dysfunction.

Shock Trauma serves as Maryland's principle teaching site for training physicians and allied professionals in the care of injury. The trauma/critical care training program involving the trauma teams and all other specialty services includes students and residents from a variety of prestigious schools and programs across the country. Students and residents participate in patient care, core curriculum lectures, case conferences and weekly grand rounds. Students and residents are also given the opportunity to participate in clinical research trials.

Undergraduate Medical Program
Third Year
GSUR 530. A three-week trauma team rotation is required as part of the basic surgical clerkship. Students participate under supervision in the clinical resuscitation, diagnosis, and management of trauma and emergency medicine.
Fourth Year
GSUR 546 01. Senior students may elect a one-month elective on the trauma surgery team.

Graduate Programs
In conjunction with the Department of Surgery, an approved surgical critical care fellowship is offered with three months on the trauma surgical team and rotations through all the UMMS intensive care units. Successful completion leads to eligibility for a certificate of added qualification in surgical critical care. An approved orthopaedic trauma fellowship is also offered at the Shock Trauma Center. Finally, a one-year fellowship in trauma anesthesia is offered. Over the past two decades, graduates of these fellowships have become leaders in trauma across the country and abroad.

Organized Research Centers

Center for Integrative Medicine
Director: Brian M. Berman, MD
Professor, Department of Family Medicine

The Center for Integrative Medicine is dedicated to enriching current medical practice through evaluation of the scientific foundation of complementary medicine, integration of evidence-based complementary medical therapies and approaches into patient care and emphasis on a humanistic approach to healing that values mind, body and spirit and partners with patients in healing. The program was founded in 1991, established in the School of Medicine in 1997 and became an Organized Research Center in 2002. It is comprised of four inter-dependent divisions of research, education, patient care and informatics. Faculty members from the Center work collaboratively with departments and colleagues across the schools at the University of Maryland Baltimore, as well as with investigators nationally and internationally.

For the past nine years the Center for Integrative Medicine has been a National Institutes of Health (NIH) specialized center for research in complementary medicine with a broad-reaching program of clinical, pre-clinical and survey research investigating the safety, efficacy, cost-effectiveness and mechanism of action of complementary medicine, as well as evaluating integration of these approaches into mainstream care. Areas of focus include traditional Chinese medicine, including acupuncture, herbs and Qi Gong, and mind/body therapies; with disease areas of focus in pain related disorders such as arthritis, fibromyalgia, cancer pain, and low back pain. The Center also has a NIH planning grant for an international collaborative center with the Chinese University of Hong Kong investigating traditional Chinese medicine for functional bowel disorders.

The Center provides teaching in all four years of the medical school curriculum and a one-month elective for fourth year medical students. The Center also provides teaching to Family Medicine residents and offers a fellowship program, in conjunction with the University of Arizona, with clinical mentoring and on-line course modules. The aim of the education initiatives is to increase awareness and knowledge of complementary therapies among health professionals and facilitate the practice of integrative medicine. In addition, the Center is

committed to increasing the pool of investigators dedicated to investigation of integrative medicine through both research fellowships and mentoring of junior faculty, as well as seed funding grants to University of Maryland faculty for pilot research studies.

In order to disseminate high-quality information on complementary and integrative medicine and to guide future research, the Center is involved in gathering and systematically reviewing the world-wide literature in complementary medicine. Two comprehensive databases (CAMPAIN & ARCAM) are available on the Center's website, in addition to the Cochrane Collaboration registry of complementary medicine trials and systematic reviews. The Center is the coordinating center for the complementary medicine field of the international Cochrane Collaboration.

The Center operates an out-patient clinic since 1992 at the University of Maryland's James L. Kernan Hospital where patients are offered both complementary and conventional medical therapies and integrative models of care for acute and chronic health disorders. The clinic is one of seven charter members of the Philanthropic Collaborative for Integrative Medicine's clinical network, whose purpose is to share best practices and ensure the economic viability of integrative medicine clinical practice.

Brian Berman, MD
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Center For Research on Aging

Co-Directors: Andrew P. Goldberg, MD, Professor, Department of Medicine and Jay S. Magaziner, PhD, MS Hyg., Professor, Department of Epidemiology and Preventive Medicine

The Center for Research on Aging was established in 1998 under the leadership of Andrew P. Goldberg, MD, and Jay S. Magaziner, PhD, MS Hyg. The Center interfaces with and complements existing efforts of investigators in gerontology and geriatric medicine to develop research, educational and clinical programs which nurture and expand research and research training in aging, and it is committed to developing and implementing collaborative research and training in the critical areas at the University of Maryland campuses.

The mission of the Center for Research on Aging is to enhance the involvement and collaboration among University of Maryland faculty members in the conduct of research in aging, and to expand the conduct of interdisciplinary research training in gerontology through collaborations of investigators in gerontology at the University of Maryland Baltimore's (UMB) six health professional schools, the University of Maryland Baltimore County and the University of Maryland College Park. To accomplish these goals, the Center coordinates research and research training in those areas of gerontology that transcend traditional disciplinary lines and are amenable to an interdisciplinary approach. The Center has created, facilitated and expanded

collaborations among investigators to further the development of academic excellence in key areas of clinical, epidemiological, basic-biomedical, mental health, legal-ethical, health services and population-based research in aging. This has amplified and enriched these areas, provided outstanding research training and educational opportunities for students, trainees and health professionals, and enhanced the delivery of multidisciplinary geriatric care.

The Center for Research on Aging emphasizes research and training in primary and secondary aspects of aging, epidemiology and health services research, the pathogenesis and treatment of chronic diseases in the elderly, and the processes and mechanisms by which the health status of the elderly can be improved through innovative translational clinical research. The Center has optimized the use of resources by building on the strengths of existing funded initiatives in aging research at the University of Maryland. These include the State of Maryland funded Gerontology and Geriatrics Education and Research (GGEAR) Program, the Baltimore Hip Studies, the Department of Veterans Affairs Baltimore VA Medical Center Geriatric Research, Education and Clinical Center (GRECC) VA Center of Excellence in Stroke Rehabilitation and Neuroplasticity, and the UMB Claude D. Pepper Older Americans Independence Center, the Maryland Long-Term Care Project, the National Study of Osteoporotic Fractures, and NIH research training (T32) programs in exercise physiology and metabolism research in aging, the epidemiology of aging and rehabilitation sciences. The Center also has prepared several large data resources such as the Medicare Current Beneficiaries Survey and Stroke Registry that can be used to address targeted areas of research and design new projects. The Center for Research on Aging is committed to promoting research and research training in the foci of these initiatives: 1) exercise rehabilitation in functionally limited older patients with chronic disease; 2) the epidemiology of hip fracture; 3) the secondary prevention of coronary heart disease through health promotion and disease prevention programs in exercise and nutrition; 4) the long-term care in the elderly residing in residential and assisted-living sites; 5) the rehabilitation and epidemiology of stroke; 6) mental health and neurocognitive function; 7) health services and quality of life research; 8) obesity, diabetes and cardiovascular disease in the elderly; 9) racial disparities in metabolic and cardiovascular responses to exercise and weight loss in postmenopausal women; and 9) interdisciplinary geriatric teams. In these areas of geriatric research the Center promotes interdisciplinary research among faculty with similar interests, and supports pilot studies by trainees and junior faculty to enhance their competitiveness for peer-reviewed funding in gerontology.

Membership in the Center for Research on Aging is open to faculty, fellows and trainees engaged in research on aging at UMB and affiliated campuses, as well as members of academic institutions in Maryland who have major professional interests in gerontology and are involved in collaborative research in the Center. The Center's administrative infrastructure supports and fosters academic interactions and collaborations among faculty, and assists investigators in the development of new research projects and grants for peer-reviewed funding. Center members meet regularly to discuss and develop research projects, and benefit from the interdisciplinary approach of Center leadership to the conduct of innovative research, education and research training in gerontology.

Center For Health Policy/Health Services Research
Director: Claudia R. Baquet, MD, MPH

Associate Dean, Office of Policy and Planning &
Associate Professor, Department of Epidemiology & Preventive Medicine

The Center for Health Policy/Health Services Research provides epidemiologic/biostatistical support, quality improvement study design and evaluation, disease management program support, health outcomes studies, low literacy patient education and outreach, Medicare patient compliance studies, patient and provider surveys, and research related to rural and urban health, underserved populations and minority health care. The Center has completed health services research projects for the Maryland Department of Health and Mental Hygiene and other agencies and conducted quality improvement studies for the managed care industry. In addition, the Center has established community outreach research and education networks in urban and rural Maryland, influenced national and state health care policy and established telemedicine research and clinical programs in underserved areas.

The Center established the Computer Assisted Telephone Interviewing (CATI) Facility, a technology that has applications in survey research, outcomes measurement and patient compliance, enrollment and recruitment to clinical trials. Based in the School of Medicine, the Center is a campus-wide, multidisciplinary organized research center which involves faculty from departments throughout the University's six professional schools.

Mission Statement
To assess the changing health needs of Maryland citizens and the nation, to conduct analyses and develop policy related to state, city and national health care services, financial and economic cost, clinical outcomes, efficacy, equity and the impact of reimbursement on patient and provider behaviors. To stimulate, support and conduct interdisciplinary health policy and health services research.

Mucosal Biology Research Center
Director: Alessio Fasano, MD
Professor of Pediatrics, Physiology and Medicine and Director of the Center for Celiac Research
Associate Directors: Simeon Goldblum, MD, Director for Basic Science Research, Professor of Medicine and Pathology and Jeffrey Hasday, MD, Professor of Medicine, Pathology, Biochemistry & Molecular Biology, Director for Clinical & Translational Research, Chief of the Division of Pulmonary and Critical Care Medicine
Steering Committee: Stefanie Vogel, PhD, Professor of Microbiology & Immunology and Medicine, Matthew Fenton, PhD, Professor of Medicine, Microbiology & Immunology and Director of Research for the Division of Pulmonary and Critical Care Medicine and Terez Shea-Donohue, PhD, Professor of Medicine

The MBRC is comprised of 33 University of Maryland faculty members, plus adjunct members in associated academic and biotechnology centers. Overall direction of the MBRC is the primary responsibility of its Director, Associate-Directors, and Steering Committee members.

An innovative partnership "bridging science and life". The Mucosal Biology Research Center (MBRC), located at the University of Maryland School of Medicine in Baltimore MD, is a partnership between leading scientists and physicians working at the cutting edge of mucosal

biology research. Mucosal biology research investigates diseases of the gastrointestinal tract and lung, the two major organs of the body that possess a protective mucosal barrier that is essential for health.

The mission of the MBRC is to serve as a unique multidisciplinary research center focused on using "cutting edge" tools to understand the molecular basis for human diseases of the gastrointestinal and respiratory tracts.

The MBRC is also designed to establish joint ventures with innovative biotechnology and pharmaceutical companies in areas of translational research. Translational research is the process by which discoveries made in the laboratory are developed into novel drug candidates, new models of human disease, pioneering therapies, and drug delivery systems that can benefit patients with a various diseases of the gastrointestinal tract and lung. A partial list of these diseases includes: inflammatory bowel disease, asthma, bacterial sepsis, chronic obstructive pulmonary disease, autoimmunity, and acute respiratory distress syndrome.

The intellectual and physical resources of the MBRC are largely centered in more than 7000 square feet of laboratory and office space located in the new Health Sciences Facility II building, opened on the University of Maryland, Baltimore campus in 2003. This central facility houses 5 of the core laboratories that comprise the MBRC. This new building is fully outfitted with state-of-the-art equipment, and utilizes numerous high-technology core services on the Baltimore campus. Additional laboratories, under the direction of 28 additional MBRC faculty members, are also located nearby on campus.

The mucosa is a dynamic, multilayered tissue barrier that separates the internal host milieu from the external environment and all the microorganisms that reside there. The MBRC has a wide range of expertise that can focus on the epithelial, neuronal, and endothelial components as well as the immune cells that comprise the mucosal barrier. The expertise with multiple experimental systems enables the MBRC to apply an interdisciplinary approach to solve problems at the mucosal barrier. Some of the most important basic research interests of the MBRC include:

- Characterization of novel molecules (*e.g.* ZOT, zonulin) regulate the intercellular tight junctions within the gut epithelium that have now been linked to the pathogenesis of autoimmune diseases including diabetes mellitus and celiac disease.
- *Studies on the regulation of the tyrosine phosphorylation-responsive, pulmonary vascular endothelial paracellular pathway through which cells, macromolecules, and fluid move.*
- *Studies on the control of fever and how changes in core temperature exert effects on key components of the pulmonary response to acute injury.*
- Defining components of the innate immune response to bacterial and viral lung infections. This work focuses on the inflammatory response initiated by Toll-like receptor (TLR) agonists, with special emphasis on the genetic susceptibility of individuals to inflammatory diseases initiated or exacerbated by TLR agonists.
- Research on the interactions between immune and non-immune cells in the regulation of the host cytokine response to intestinal parasites and other pro-inflammatory pathologies including inflammatory bowel disease.

The MBRC supports active translational research programs that extend our basic research in gastrointestinal and pulmonary diseases into the clinical arena. These programs include: The Center for Celiac Disease houses a comprehensive multidisciplinary program covering clinical care, support services, education, and scientific research relating to celiac disease; University of Maryland Inflammatory Bowel Disease (IBD) Program, a multi-disciplinary practice with specialists in gastroenterology, general surgery, radiology and support services dedicated to accurately diagnosing and managing IBD and increasing patients' quality of life and conducting research and clinical trials to improve the treatment and care of IBD patients; Interstitial Pulmonary Fibrosis Study Group, which studies the mechanisms and treatment of interstitial lung diseases; Combined Critical Care Clinical Research Consortium, which coordinates research in the 140 critical care beds at the University of Maryland Medical Center, the Baltimore Veterans Administration Hospital, and the world-renowned R. Adams Cowley Shock Trauma Center; COPD Clnical Network, which performs multicenter clinical trials on various aspects of Chronic Obstructive Pulmonary Disease pathogenesis and treatment; ARDSNet, a network that performs multicenter clinical trials on ARDS, including the paradigm-shifting study on low tidal volume ventilation in patients with ARDS; University of Maryland Airway Research Center, which designs and tests therapeutic inhaled delivery devices for clinical trials of treatment for asthma and COPD; University of Maryland Genomics Core Facility, which supports the genetic analysis of patients with airways diseases using approaches that target candidate genes as well as those that use a genome-wide approach; University of Maryland General Clinical Research Center, which offers nursing and ancillary services for inpatients and outpatients, as well as core services in biostatistics, bioinformatics, and nutrition.

The MBRC is affiliated with several other research centers and biotechnology companies in Maryland. These include the Center for Celiac Research, Center for Vaccine Development, the Greenebaum Cancer Center, the Baltimore Veterans Administration Medical Center, the Institute for Human Virology, GCRC, Tap Pharmaceuticals, and Alba Therapeutics Corporation.

Center For Vaccine Development
Director: Myron M. Levine, MD, DTPH
Professor, Departments of Medicine, Microbiology & Immunology and Pediatrics

The Center for Vaccine Development (CVD), an Organized Research Center, is dedicated to research, training, clinical consultation and public health consultation in the broad field of vaccinology. CVD faculty hold primary appointments in the departments of medicine, pediatrics, or microbiology and immunology. The CVD has four primary missions.

The first is to foster and carry out superior, state-of-the-art, peer reviewed, innovative, multidisciplinary research on all aspects of vaccinology including:

- Basic research (e.g., pathogenesis, engineering of vaccine candidates, fundamental studies of immune response, studies of host-pathogen interaction);
- Clinical research (e.g., Phase 1 and 2 clinical trials assessing the safety, immunogenicity, transmissibility, etc., of vaccine candidates in pediatric, young adult, geriatric and special risk populations; intensive measurement of serum, mucosal and cell-mediated immune responses);

- Epidemiologic research and field studies (e.g., large-scale, randomized, controlled field trials to assess vaccine efficacy and effectiveness; serosurveys; prevalence surveys of pathogen carriage; cohort studies quantifying the occurrence and relative importance of known and newly discovered pathogens).

This dominant mission of the CVD requires a multidisciplinary approach to the development and testing of new and improved vaccines. In total, 28 full-time faculty, two part-time faculty and six adjunct faculty (18 MDs, 16 PhDs, 2 MD/PhDs) and approximately 75 staff members work in the Baltimore complex. Approximately 90 percent of their salary support comes from competitive grants and research contracts, especially from the NIH. In fiscal year 2004 CVD investigators were awarded over $33.8 million in grants and contracts (mostly from NIH).

Field research is carried out at several sites around the world. CVD has three field units: CVD-Chile in South America, CVD-Mali in West Africa and CVD-Malawi in Southern Africa.

The second mission of the CVD is to train medical and graduate students, post-doctoral fellows and visiting scientists within the broad discipline of vaccinology. Most CVD faculty hold secondary appointments in departments with graduate programs such as microbiology and immunology, and epidemiology and preventive medicine, allowing them to serve as graduate student mentors. Medical students often perform short-term research internships in CVD laboratories or field sites. The CVD currently holds two NIH-supported training grants, including the only T32 training grant in Vaccinology.

The CVD's third mission is to provide consultations in the area of clinical vaccinology, advice on immunizations for infants and children, travelers, pregnant women, and immunocompromised hosts, especially through our Traveler's Health Service, an outpatient clinic.

Finally, the CVD provides expert consultantships or committee membership to national and international agencies (e.g., National Institutes of Health, Food and Drug Administration, World Health Organization, Institute of Medicine), Ministries of Health of various countries and industry.

Endowments and Gifts

Chairs
Dr. Herbert Berger Chair in Medicine
John Z. and Akiko K. Bowers Distinguished Professorship and Dean's Chair
Dr. Robert W. Buxton Chair in Surgery
Cobey Chair in Neonatology
Dr. John M. Dennis Chair in Diagnostic Radiology
Dr. Martin Helrich Chair for Anesthesiology

Maxwell Hurston, MD Chair in Orthopedic Surgery
Francis X. Kelly Chair in Trauma Surgery
James Lawrence Kernan Professor and Chair of the Department of Orthopedics
Moses Paulson, MD and Helen Golden Paulson Chair in the Division of Gastroenterology
Linda and Kenneth Pollin Chair in Pediatric Cardiology
John A. Scholl, MD Chair in Pediatrics
Raymond K. Thompson, MD Chair in Neurosurgery
Dr. Theodore E. Woodward Chair in Medicine
John D. Young, Jr. Chair in Urology

Professorships
Anonymous Professorship in Orthopaedic Trauma
Anonymous Professorship in Pediatric Medicine
Barbara Baur Dunlap Professorship in Transplantation for the Department of Surgery
Clyde Clayton Professorship in Neurology
Dr. William H. Crim Professorship and Scholarship
Professorship in Dermatology
Simon and Bessie Grollman Distinguished Professorship
George R. Hepburn Dynasplint Endowed Professorship in Physical Therapy and Rehabilitation Science
Pamela Rose Hevey Professor of Neurological Surgery
Myron M. Levine, MD Professorship in the Center for Vaccine Development
Louis O.J. Manganiello, MD and Benjamin Hall Smith, M.D., Professorship in Neurosurgery
William Marshall, MD Professorship in Neurology
Joseph S. McLaughlin, MD Professorship in Cardio Thoracic Surgery
Campbell and Jeanette Plugge Professorship in Surgery
Dr. Christian and Corrine Richter Professorship in Obstetrics and Gynecology
Albert Shapiro, MD Endowed Professorship in Dermatology
Celeste Lauve Woodward, MD Professorship in Humanitarian and Ethical Medical Practice

Visiting Professorships
Dr. Ruth W. Baldwin Visiting Professorship in Pediatrics
Ipolitas Benedict Bronushas, MD Visiting Professorship in Family Medicine
Dr. Joseph B. Ganey Visiting Professorship in Surgery
Dr. Aaron I. Grollman Visiting Professorship in Basic Medical Sciences
Charles M. Henderson, MD Visiting Professorship
Albert R. Winner Visiting Professorship

Lectureships
Dr. Daniel J. Abramson Lectureship
Dr. Thurston R. Adams Memorial Lecture
Alice Messinger Band Lecture
Eugene S. Bereston, MD Lecture Fund
Dr. Herbert Berger Lectureship
Dr. Robert W. Buxton Lectureship

Dr. Harry and Mitzie P. Cohen Lectureship in Obstetrics-Gynecology and Anesthesiology
M. Carlyle Crenshaw, Jr., MD
Memorial Lectureship
Charles Reid Edwards Lecture
Lecture in Emergency Medicine
Abraham H. Finkelstein, MD
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Dr. Julius Friedenwald Lecture
Charles Getz, MD Memorial Lecture
Dr. Edmund Goidl Immunology
Lecture Fund
Grollman Lecture Fund
F. Albert and Mary E. Haase Lectureship
in Otolaryngology
Freida B. Hildenbrand Lecture in Alzheimer's Disease
Dr. Harry C. Hull Distinguished Lectureship
Dr. Jack Allen Kapland Lectureship
James P. Keogh, MD Occupational Medicine Memorial Fund
Bernard S. Kleiman, MD Lecture
Stephen E. and Jeffrey A. Kleiman Lectureship
Dr. Leon A. Kochman Clinical Lectureship
Dr. John C. Krantz Lectureship
Dr. Frank C. Marino Distinguished Lectureship in Surgery
Dr. and Mrs. Howard B. Mays Lectureship in the History of Medicine and/or Medical Ethics
Dr. Jerome K. Merlis Memorial Lectureship in Neuroscience
Nicholas C. and Helen K. Mueller
Surgical Lectureship
Dr. Daniel A. Nachshen Memorial
Lecture in Physiology
Dr. Maurice C. Pincoffs Fund
Plastic Surgery Distinguished Lectureship
The Distinguished Puerto Rican Lectureship
Richard D. Richards, MD Lectureship in Ophthalmology
Isadore A. Siegel Lecture
Dr. Harry L. Sponseller Memorial Distinguished Lectureship
Dr. Samuel Steinberg and Dr. H. Boyd Wylie Lectureship
Taylor Lectureship in Neurology and Psychiatry
Dr. Isadore Tuerk Annual Lectureship on Alcoholism and Other Drug Dependencies
Dr. Henry J. Walton Distinguished Lectureship in Radiology
Dr. H. Leonard Warres Lectureship in Radiology
Dr. George H. Yeager Distinguished Lectureship
Reverend Dr. Gibson J. Wells Lectureship

Fellowships
Anonymous Fellowship in Surgery
Dr. James G. Arnold Memorial Fellowship in Neurosurgery

Dr. and Mrs. Frederick J. Balsam Student Fellowship in Rehabilitation Medicine
Leslie B. Barnett, MD Memorial Student Fellowship in Neurology
Jeffrey Ivan Bennett Fund
Dr. Paul R. Brown Research Fellowship
Jessie M. Cook Research Fellowship in Circulatory Disease
Isaac E. Emerson Fellowship in Pharmacology
Dr. Jose R. Fuentes Memorial Student Fellowship in Obstetrics and Gynecology
Dr. Aaron I. Grollman Memorial Postdoctoral Fellowship in Surgery
Harry Gudelsky Fund
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The Passano Clinical Research Fellows Fund
Dr. Howard C. Silver Memorial Student Fellowship in Family Medicine
Dr. Harry Shelly and Mrs. Helen Shelly Fellowship in Urology
Smith and Nephew Fellowship Fund
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Awards
Class of 1966 Junior Prize for Excellence in Academics
W. Wayne Babcock Award in Surgery
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Douglass Award
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Dr. Jeremy Hallisey Prize Fund
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Dr. Leonard M. Hummel Memorial Award
Giuseppe Inesi, MD Prize in Cell and Molecular Biology
William D. Kaplan, MD Award
Elizabeth G. Macauley Memorial Award
for Outstanding Clinical Proficiency
Kenneth L. Malinow, MD Memorial Prize
William H. Mosberg, Jr., MD Award for Neurosurgery
Robert R. R. Roberts, MD Memorial Prize
Scharling Memorial Award
John W. Turner, MD Memorial Prize
Dr. Henry F. Ullrich Educational Prize
Dr. Samuel Weinberg and Frances Weinberg Loeb Award
Dr. Hans R. Wilhelmsen Award for Excellence in Surgery
Theodore E. Woodward Prize in Internal Medicine
William Yudkoff, MD Memorial Award

Research Funds
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Neurosurgery Fund "B"
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The Schramek Fund for Alzheimer's Disease Research
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Elijah Saunders Endowment for the School of Medicine
David R. Solomon Memorial Fund
Dr. Homer U. Todd Fund
Charles Van Buskirk, MD Endowment for the Department of Neurology
Lois A. Young-Thomas Memorial Fund

Endowments funding scholarships, student loan funds and other student prizes and awards are listed in the Financial Information and Academic Information sections.

The John Beale Davidge Alliance
Alumni and friends who make contributions to the School of Medicine of $10,000 and above are recognized as members of the John Beale Davidge Alliance, a permanent recognition society named after the School's founder and first dean. There are two honors levels within the Alliance: the Silver Circle, for gifts of $25,000-$49,999, and the 1807 Circle, for contributions of $50,000 and above. The exceptional support provided by these individuals enables the school to continue the tradition it began in 1807, of educating physicians and providing care for patients.

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Kenzora, John E., MD, Professor
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Ludwig, Steven C., MD, Assistant Professor
Milbrandt, Todd A., MD, Assistant Professor
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Nascone, Jason, MD, Assistant Professor
Pollak, Andrew N., MD, Associate Professor
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Stains, Joseph P., PhD, Assistant Professor
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Turen, Clifford H., MD, Associate Professor

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Duh, Show-Hong, PhD, Assistant Professor
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Gyure, Kymberly A., MD, Assistant Professor
Hamburger, Anne W., PhD, Professor
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Lipsky, Michael, PhD, Professor
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Mann, Dean L., MD, Professor
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Panda, Aruna, PhD, Assistant Professor
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Zhan, Steven, PhD, Professor
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Grossman, Neil J., MD, Professor
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Jackson, M Christine, MD, Assistant Professor
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Winters, Michael E., MD, Instructor
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Wolf, Jeffrey, MD, Assistant Professor
Wu, Zhongjun, PhD, Assistant Professor
Yepes, Manuel S., MD, Assistant Professor

University Policy Statements

Rights and Responsibilities for Academic Integrity

The academic enterprise is characterized by reasoned discussion between student and teacher, a mutual respect for the learning and teaching process and intellectual honesty in the pursuit of new knowledge. By tradition, students and teachers have certain rights and responsibilities that they bring to the academic community. While the following statements do not imply a contract between the teacher or the institution and the student, they are nevertheless conventions that should be central to the learning and teaching process.

I. Faculty Rights and Responsibilities

A. Faculty members shall share with students and administrators the responsibility for academic integrity.

B. Faculty members shall enjoy freedom in the classroom to discuss subject matter reasonably related to the course. In turn, they have the responsibility to encourage free and honest inquiry and expression on the part of students.

C. Faculty members, consistent with the principles of academic freedom, have the responsibility to present courses that are consistent with their descriptions in the catalog of the institution. In addition, faculty members have the obligation to make students aware of the expectations in the course, the evaluation procedures and the grading policy.

D. Faculty members are obligated to evaluate students fairly, equitably and in a manner appropriate to the course and its objectives. Grades must be assigned without prejudice or bias.

E. Faculty members shall make all reasonable efforts to prevent the occurrence of academic dishonesty through appropriate design and administration of assignments and examinations, careful safeguarding of course materials and examinations, and regular reassessment of evaluation procedures.

F. When instances of academic dishonesty are suspected, faculty members shall have the responsibility to see that appropriate action is taken in accordance with institutional regulations.

II. Student Rights and Responsibilities

A. Students share with faculty members and administrators the responsibility for academic integrity.

B. Students have the right of free and honest inquiry and expression in their courses. In addition, students have the right to know the requirements of their courses and to know the manner in which they will be evaluated and graded.

C. Students have the obligation to complete the requirements of their courses in the time and manner prescribed and to submit to evaluation of their work.

D. Students have the right to be evaluated fairly, equitably and in a timely manner appropriate to the course and its objectives.

E. Students shall not submit as their own work any work that has been prepared by others. Outside assistance in the preparation of this work, such as librarian assistance, tutorial assistance, typing assistance or such special assistance as may be specified or approved by the appropriate faculty members, is allowed.
F. Students shall make all reasonable efforts to prevent the occurrence of academic dishonesty. They shall by their own example encourage academic integrity and shall themselves refrain from acts of cheating and plagiarism or other acts of academic dishonesty.
G. When instances of academic dishonesty are suspected, students shall have the right and responsibility to bring this to the attention of the faculty or other appropriate authority.

III. Institutional Responsibility

A. Constituent institutions of the University System of Maryland shall take appropriate measures to foster academic integrity in the classroom.
B. Each institution shall take steps to define acts of academic dishonesty, to ensure procedures for due process for students accused or suspected of acts of academic dishonesty and to impose appropriate sanctions on students found to be guilty of acts of academic dishonesty.
C. Students expelled or suspended for reasons of academic dishonesty by any institution in the University System of Maryland shall not be admissible to any other System institution if expelled or during any period of suspension.
(Approved Nov. 30, 1989, by the University System of Maryland Board of Regents.)

Disclaimer

No provision of this publication shall be construed as a contract between any applicant or student and the University of Maryland Baltimore. The University reserves the right to change any admission or advancement requirement at any time. The University further reserves the right to ask a student to withdraw at any time when it is considered to be in the best interest of the University.

Admission and curriculum requirements are subject to change without prior notice.

Eligibility to Register

A student may register at the University when the following conditions are met:

1. the student is accepted to the University,
2. the student has received approval from the unit academic administrator, and
3. the student has demonstrated academic and financial eligibility.

Human Relations Code Summary

The University of Maryland Baltimore has a Human Relations Code for use by the entire campus community. The code represents the University's commitment to human relations issues. The specific purposes of the code include:

1. Prevention or elimination of unlawful discrimination on the basis of race, color, creed, sex, sexual orientation, marital status, age, ancestry or national origin, physical or mental handicap, or exercise of rights secured by the First Amendment of the U.S. Constitution; and
2. Establishing a timely, effective grievance procedure as an alternative to more lengthy formal processes for resolution of human relations issues.

A Human Relations Committee was created to oversee the code. It is comprised of campus faculty, administrators and students and is advisory to the president of the campus. The committee may institute educational programs and provide an open forum on human relations issues. In addition, the committee is charged with maintaining a mediation, investigation and hearing process for specific complaints of discrimination brought by students, faculty or staff. The code describes the particulars of the hearing process. It is the intent of the code to provide a grievance procedure for an individual on campus who wants a cross-section of the campus community to investigate and mediate a problem without having to resort to complaints to external agencies such as the Maryland Commission on Human Relations, complaints under personnel rules or lawsuits.

Copies of the Human Relations Code are available in the dean's office, student affairs and USGA offices in the Baltimore Student Union, and the Human Resources Management and Affirmative Action offices in the Adminstration Building.

Service to Those with Infectious Diseases

It is the policy of the University of Maryland to provide education and training to students for the purpose of providing care and service to all people. The institution will employ appropriate precautions to protect providers in a manner meeting the patients' or clients' requirements while also protecting the interest of students and faculty members participating in the provision of such care or service.

No student will be permitted to refuse to provide care or service to any assigned person in the absence of special circumstances placing the student at increased risk for an infectious disease. Any student who refuses to treat or serve an assigned person without prior consent of the school involved will be subject to penalties under appropriate academic procedures; such penalties to include suspension or dismissal.

Confidentiality and Disclosure of Student Records

It is the policy of the University of Maryland to adhere to the Family Educational Rights and Privacy Act (FERPA or Buckley Amendment). As such, it is the policy of the University:

1. to permit students to inspect their education records,
2. to limit disclosure to others of personally identifiable information from education records without students' prior written consent,
3. to provide students the opportunity to seek correction of their education records where appropriate, and
4. to advise students they may file a complaint with the U.S. Department of Education to allege a failure by the University to comply with FERPA.

Scheduling of Academic Assignments on Dates of Religious Observance

It is the policy of the University of Maryland to excuse the absence(s) of students that result from the observance of religious holidays. Students shall be given the opportunity, whenever feasible, to make up, within a reasonable time, any academic assignments that are missed due to individual participation in religious observances. Opportunities to make up missed academic assignments shall be timely and shall not interfere with the regular academic assignments of the

student. Each school/academic unit shall adopt procedures to ensure implementation of this policy.

Review of Alleged Arbitrary and Capricious Grading
It is the policy of the University of Maryland that students be provided a mechanism to review course grades that are alleged to be arbitrary or capricious. Each school/academic unit shall develop guidelines and procedures to provide a means for a student to seek review of course grades. These guidelines and procedures shall be published regularly in the appropriate media so that all faculty members and students are informed about this policy.

Position on Acts of Violence and Extremism that are Racially, Ethnically, Religiously or Politically Motivated
The University System of Maryland Board of Regents strongly condemns criminal acts of destruction or violence against the person or property of others. Individuals committing such acts at any campus or facility of the University will be subject to swift campus judicial and personnel action, including possible expulsion or termination, as well as possible state criminal proceedings.

Student Right to Know and Campus Security Act Request
The Student Right to Know and Campus Security Act (Public Law 101-542), signed into federal law November 8, 1990, requires that the University of Maryland Baltimore make readily available to its students and prospective students the information listed below.
Should you wish to obtain any of this information, please check the appropriate space(s), fill in your name, mailing address and UMB school name, print this form and send it to:

University Office of Student Affairs
Attn: Student Right to Know Request
University of Maryland Baltimore
Student Center at Pine Street
222 N. Pine Street
Baltimore, MD 21201

Complete and return this portion
Financial Aid
Costs of Attending the University of Maryland Baltimore
Refund Policy
Facilities and Services for Handicapped
Procedures for Review of School and Campus Accreditation
Completion/Graduation Rates for Undergraduate Students
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Campus Safety and Security
Campus Crime Statistics